ENGINEERING NEWS-RECORD

DEC. 21, 1961

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QUARTER

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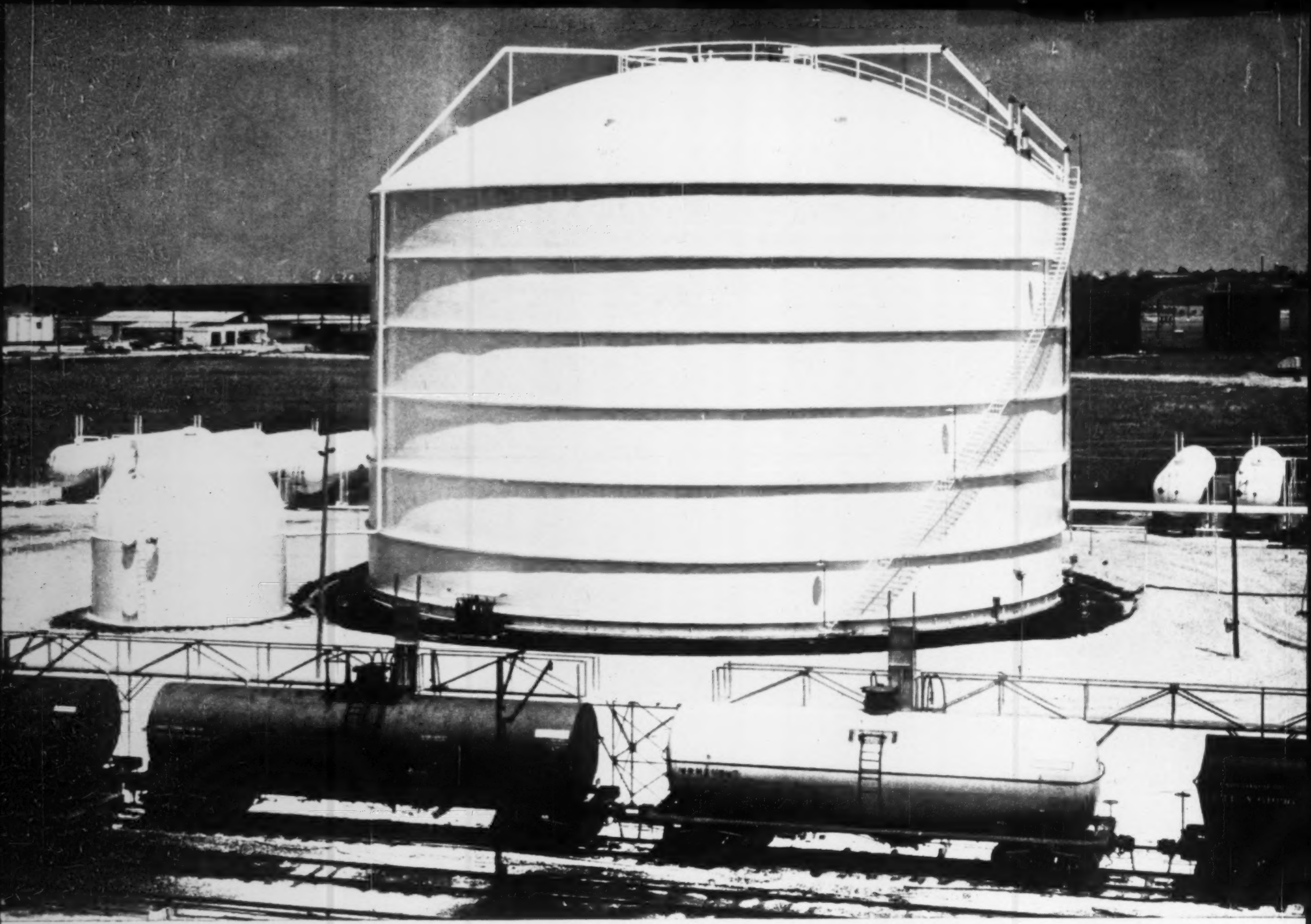


Another Cost-Saving Triumph for Refrigerated Storage of Anhydrous Ammonia

The key to efficient, economical storage of anhydrous ammonia at the Mid-South Chemical Co., plant in Memphis, Tenn., is this refrigerated storage facility designed and built by CB&I.

The economy of refrigerated storage facilities operating at atmospheric pressure (including operating and maintenance cost) has been proved many times in comparison with conventional pressure storage at ambient temperatures. Inherent safety features are built into the facilities.

This same economic benefit is available for "peak shaving" storage of liquefied petroleum gas and for gas production plants.

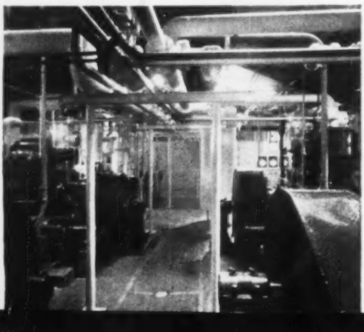
Single Responsibility is assured – from initial planning through all phases of designing, engineering, fabricating and constructing – when you choose CB&I to build your refrigerated storage facility.

As the leading designer of low-temperature storage facilities, CB&I has considerable information that can be of value to you. Write for Bulletin G-48. Chicago Bridge & Iron Company, 332 S. Michigan Ave., Chicago 4, Ill. Offices and subsidiaries throughout the world.

The heart of the installation is a 106 ft. dia. double-wall insulated steel tank which stores 9,560 tons (80,000 bbls. water capacity) of anhydrous ammonia at about −27°F. and 0.5 psig. Conventional storage at ambient temperatures would require 136 high-pressure 30,000 gallon blimps. Control is automatic – provided by a combination pneumatic-electrical system.

CB&I **built it!**

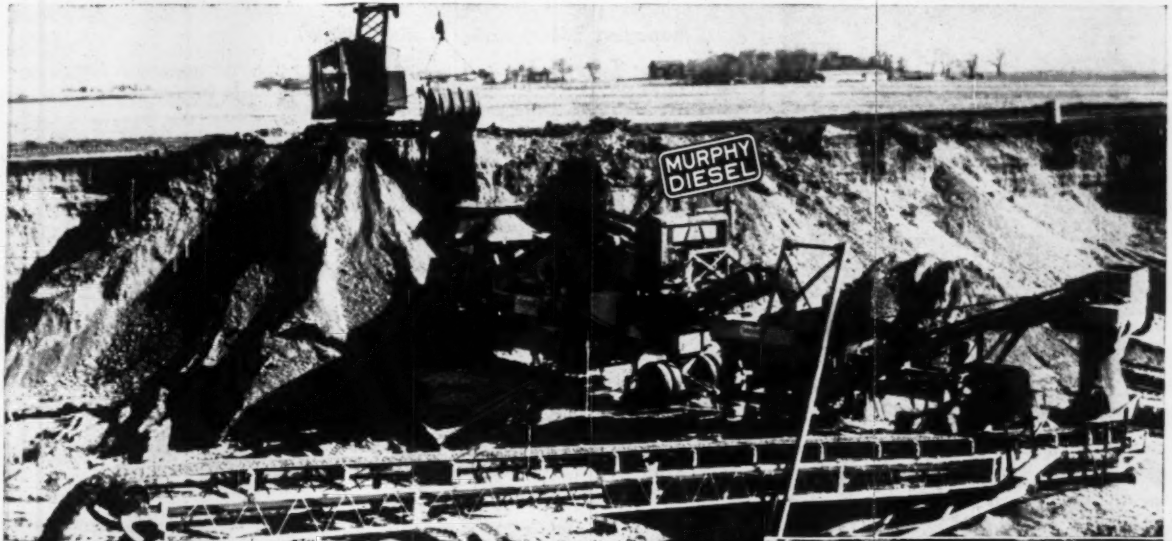
CB-6120



HERE'S HEAVY-DUTY WORKING POWER BY

MURPHY DIESEL

FOR A 2-MILLION TON PER YEAR AGGREGATE PLANT



A 133 HP (continuous) Murphy Diesel powers a Cedarapids Commander crushing plant in Larson's George Pit, near Joliet, Ill. This plant produces approximately 2200 tons of road aggregate per day.

MURPHY
DIESEL
Cedarapids

At the Sears Pit, Sycamore, Ill., a 203 HP (continuous) Murphy Diesel powers a Cedarapids Double Impeller Impact Breaker primary. This pit produces 1700 tons per day of road rock, aglime, concrete aggregate, and stone chips.

Elmer Larson, Inc., of De Kalb, Illinois, one of the Midwest's largest aggregate producers, has produced around 25 million tons in the past 30-odd years. Owners Elmer and Leon Larson know the value of equipment that is engineered for *hard work*, with dependability and economy. That's why they chose Murphy Diesel power for the plants shown here.

Murphy Diesels give you the kind of *usable, hard-working* power you need, delivered into the job. Murphy power takes hold of a load and really hangs on. Murphys' good lugging power is the result of high rising torque. This helps keep your equipment at the right operating speed for efficient production and more profit. And Murphys get every ounce of power out of every drop of fuel. When you see your Murphy Diesel Dealer for proof, ask about low maintenance and economical operation, too.

MURPHY
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430-N

HEAVY-DUTY POWER FOR CONSTRUCTION

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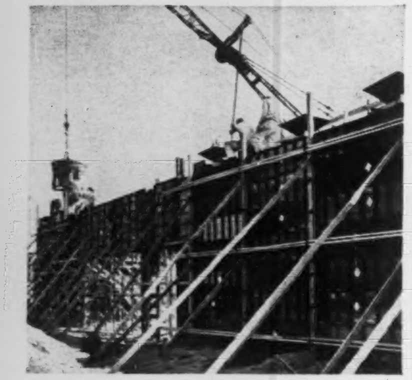
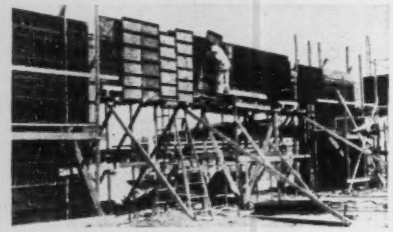


Horizontal gang forming with Symons steel-plys saves material and labor

Decorative outside walls, requiring V-scoring at 8-foot intervals, were poured with Symons Steel-Ply Forms by contractor MacIsaac & Menke, Los Angeles. The job—General Telephone of California's new offices in Norwalk.

Like many other contractors, MacIsaac & Menke consulted with The Symons engineering staff to determine if gang forming could be used. Symons recommended gang forming Symons Steel-Ply Forms *horizontally*, and using ½ inch standard V-joints at 8-foot spacings. Using this system the job could be (and was) poured in much less time than other common methods.



Workman setting Symons Steel-Ply Forms in place on section of building where gang forming was not required.

Because all problems were worked out before starting the job, there was considerable savings in material and labor; and forming, pouring and stripping time was cut substantially.

For the *complete story, write us.* Symons Forms can be purchased outright or rented with purchase option.

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A Stang dewatering system is keeping the excavation for this dam dry. Heavy equipment moves freely throughout the site, steep slopes stay put, concrete is placed on dry bedrock. In spite of widely varying river levels, the contractor is enjoying economical, flexible and complete water control on this project. Wherever the project, whatever your problem—if it's water handling, you can count on Stang.

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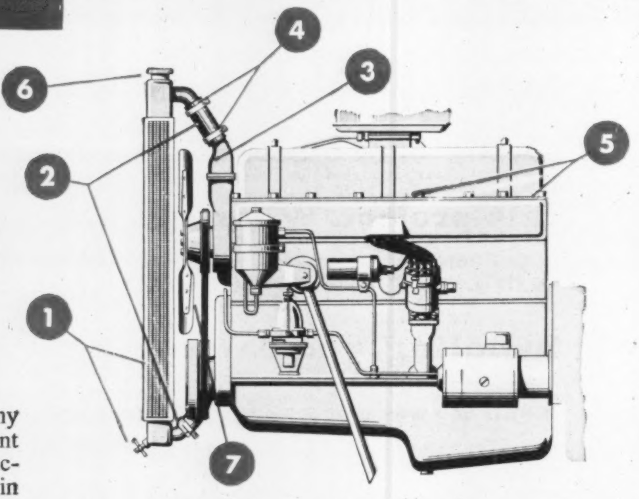
61-1

Project: Eufaula Dam, Canadian River near Muskogee, Oklahoma
Contractor: Joint venture of Tecon, Winston, Green
Dewatering Contractor: Subgrade Engineering Corporation

LUBE LOGIC

Tips for more

Antifreeze: what's the best type to use; how to make sure you get maximum protection



It's getting pretty close to antifreeze weather in many parts of the country, which brings up two important points: choosing the best type of antifreeze for construction machinery; and making sure the cooling system is in good condition, so the antifreeze can do its job properly.

The right type of antifreeze is the permanent kind. Construction equipment engines operate best at 180°F jacket temperature which is ten degrees higher than the boil-off point for alcohol. Permanent antifreeze (like Texaco Startex) will stay on the job at the temperature that's best for the engine. *Don't* substitute salt or kerosine solutions. They won't freeze, true enough, but they're tough on engine components.

It's important to keep the cooling system in good shape for three reasons: first, because antifreeze that gets into the crankcase causes severe varnish deposits on pistons and rings; second, because you want the antifreeze solution to circulate properly; and third, because antifreeze lost through a leak costs a lot more to replace than just plain water. Before you add antifreeze, check the following points:

1. Clean the cooling system—drain and flush thoroughly.
2. Check the radiator hoses, replace any that are soggy or collapsed.
3. Check the thermostat. If the thermostat is in good condition, the thermostat discharge connection will remain closed until the coolant in the water jacket is up to operating temperature.
4. Tighten connections on hoses that don't need replacing. Antifreeze can pass through spaces too small for water leaks.
5. Tighten cylinder head, oil cooler and other hold-down bolts.
6. Check radiator filler cap gasket.
7. Inspect and adjust fan belt.
8. Now you're ready to put in the antifreeze.

After the antifreeze is in, it's a good idea to:

1. Check the level at operating temperature.
2. Check for leaks.
3. Check water pump packing nut adjustment.
4. Check cooling solution with suitable hydrometer to make sure of protection temperature.

Metal concrete forms can be readied for re-use faster

You can get metal concrete forms cleaned up and back on the job faster if you spray them, before use, with Texaco Stazon. Use the Stazon just as it comes from the container for best results. Field reports say it gives the concrete a fine smooth finish, and the Stazon prevents sticking, shortens clean-up manhours.

Magneto Lubrication: three IFs and a BUT

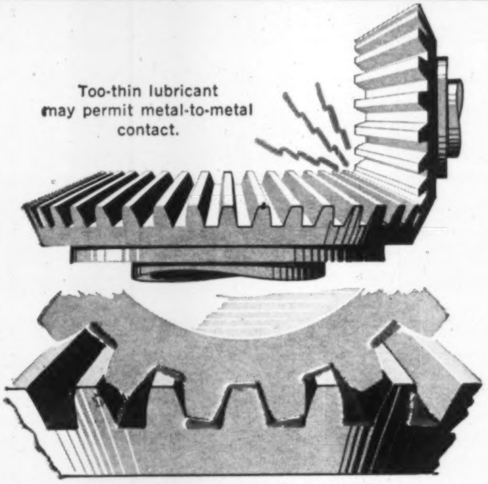
IF the magneto is oil-lubricated, apply a few drops of oil every 500 hours.

IF the magneto is grease lubricated, apply Texaco Marfak Multi Purpose 2 every 100 hours.

IF the magneto is located near the engine exhaust pipe, lubricate with Texaco High Temp Grease every 50 hours.

BUT if the bearings on your magneto are *sealed*, follow manufacturer's recommendations and let the distributor do the servicing.

efficient equipment performance



Too-thin lubricant may permit metal-to-metal contact.

Too-thick lubricant will hold dirt, pack in gear teeth, may damage bearings.

Key points in choosing gear lubricant for gyratory crushers

One of the toughest lube jobs on a gear-driven gyratory crusher is the gears themselves. They're partly protected by oil-tight cases and dust rings, but some contamination is inevitable, and it's essential that you choose a lubricant that can take it.

Viscosity is very important. These gears are very heavily loaded, so too-low viscosity may not provide a film thick enough to prevent metal to metal contact. On the other hand, if the lubricant is too thick, it will hold grit and dust in suspension, and let it develop a scoring action on the gear teeth. In addition, dust tends to dry out lubricants, and also creates a "packing" condition between gear teeth. This packing of dust and dried lubricant can build up undue pressure on gears and bearings.

Your best bet is a lubricant with a viscosity between 50 and 160 seconds Saybolt Universal at 210°F, with extreme pressure characteristics. These specifications will get you a lubricant with a good compromise between too thick and too thin. Ask any Texaco Lubrication Engineer to help you pick the right grade for your temperature zone.

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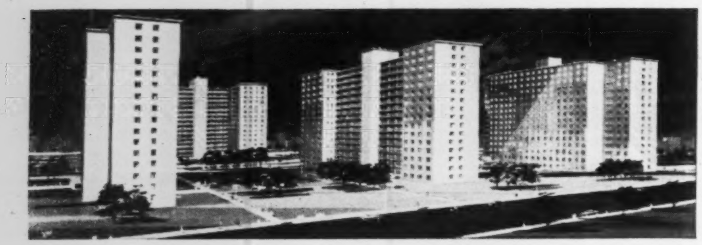

RE-BARS FROM RYERSON FOR HUGE SLUM CLEARANCE PROJECT. 95 acres of dense slum area will be reclaimed when this Chicago Housing Authority project containing 4415 apartments is completed. Ryerson is supplying fabricated reinforcing steel for 28 buildings, each 16 stories high. **Architects-Engineers:** Shaw Metz & Associates, Chicago. **General Contractor:** Gust K. Newberg Construction Co., Chicago.

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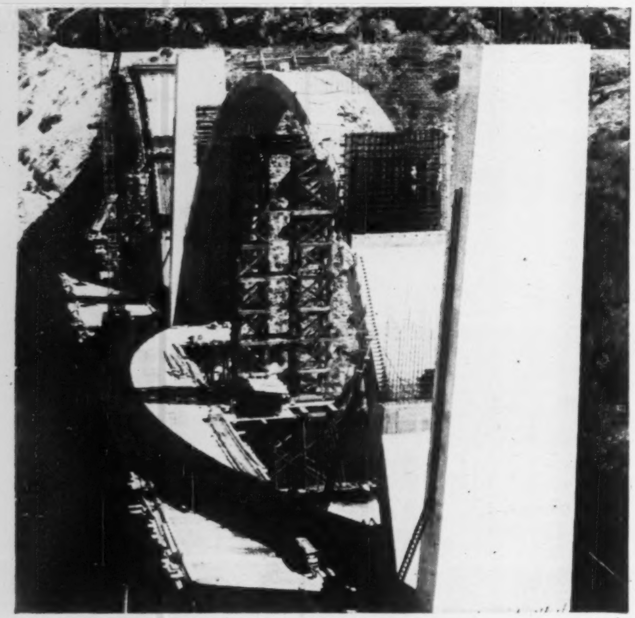


On the important jobs where supply problems are most complex and where schedule delays would be most costly, more and more contractors rely on Ryerson re-bar service.

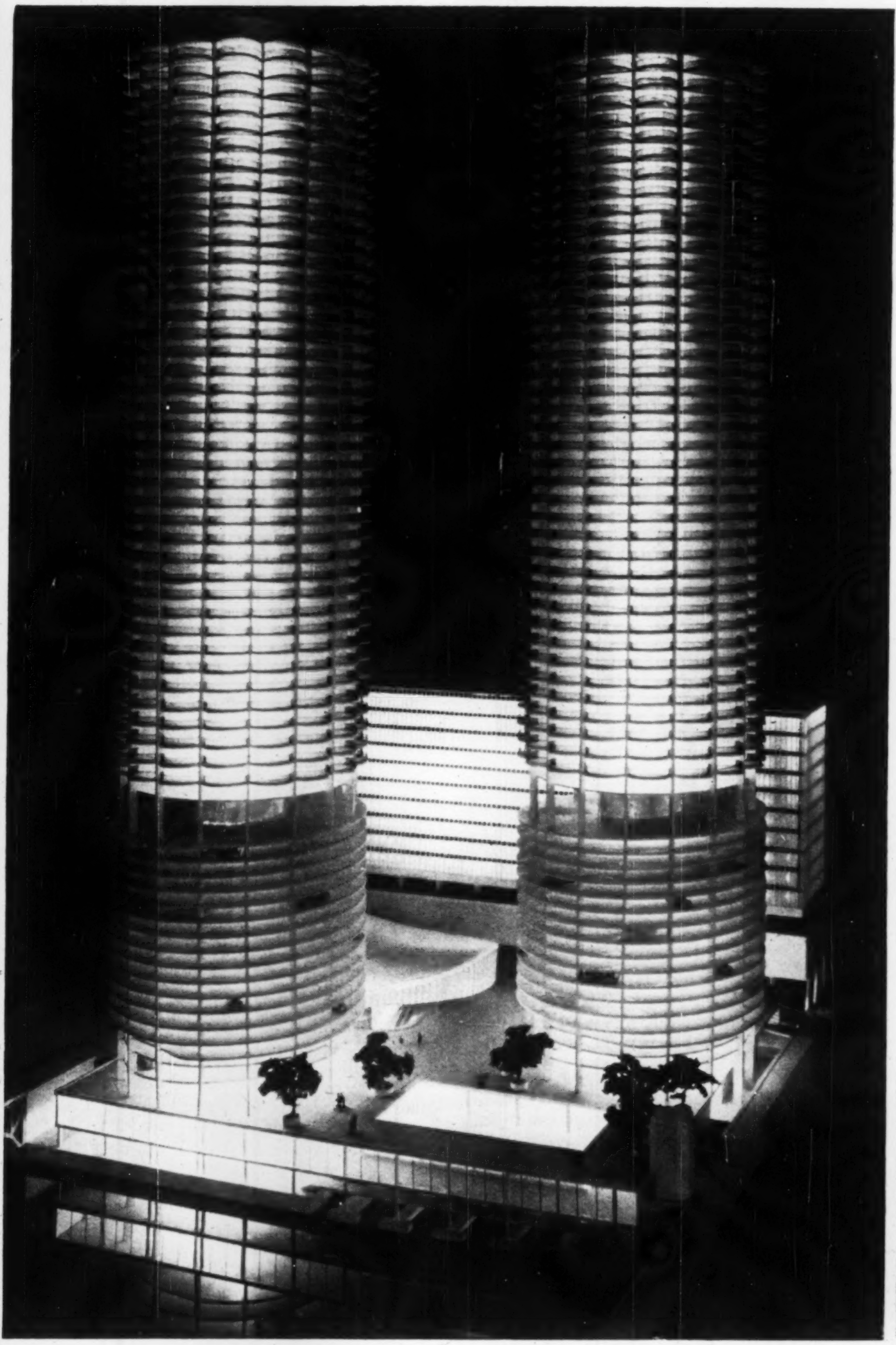
Ryerson's unsurpassed capacity is one reason—the nationwide scope of Ryerson service is another. A third reason is the range and flexibility of Ryerson service.

Our experience qualifies us to evaluate the special problems of each job and come up with re-bar service tailored to the particular requirements. For example, to expedite delivery and placement we may assign Ryerson specialists to the job site. Or to make quick schedule changes easy, we may fabricate some steel at the site.

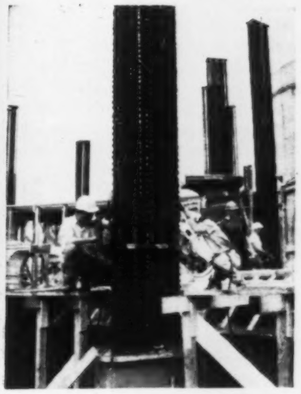
The next time you build with reinforced concrete, look to Ryerson for special reinforcing steel service—tailored to meet your requirements whatever the size or nature of the job.

ONE OF THE FIRST THERMIT-WELDED RE-BAR JOBS was this Western Pacific Railroad bridge over the North Fork of the Feather River. #18 and #11 bars from Ryerson were welded end to end so that continuous tendons of steel up to 460 ft. long reinforce each giant arch. And Ryerson deliveries were dependably on schedule despite inaccessible back-country location of project. **Consulting Engineers:** Woodruff & Sampson, San Francisco. **General Contractor:** Pacific Bridge Company, Alameda, California.

STRIKING NEW SCHOOL. The senior high school in Wayland, Mass. features collegiate grouping of six academic centers, providing 1000 students with the most advanced teaching techniques. Academic buildings are of lift-slab construction—reinforced with re-bars from Ryerson. **Architects:** The Architects Collaborative, Cambridge, Mass.; Partner in charge, John C. Harkness; Job captain, Herbert Gallagher. **Engineers:** Souza and True, Cambridge, Mass. **Contractor:** N.D.C. Construction Co., Natick, Mass.



TWIN 60-STORY TOWERS will dominate the spectacular Marina City development now under construction at the north edge of Chicago's Loop. These are the tallest reinforced concrete structures ever built, and will contain 7000 tons of re-bars from Ryerson. Towers will have 896 apartments, and parking for 900 cars. Also included are an office building, 54 bowling lanes theater, auditorium, shops, restaurants and docking facilities for 700 boats. (Below): Prefabricated assemblies of interlocking spirals and large bars with steel plates top and bottom are welded together to form continuous columns of reinforcing steel in the 60-story towers. **Sponsors:** Marina City Building Corporation, William L. McFetridge, Pres. **Management:** Management Corporation, Charles R. Swibel, Pres. **Architects-Engineers:** Bertrand Goldberg Associates, Chicago. **General Contractor:** James McHugh Construction Co., Chicago.



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CIRCLE 7 ON READER SERVICE CARD

Reader Comment

Ordinary Corrosion Wrecked Tank

Investigators' findings on the collapse of a 103-ft-dia prestressed concrete sludge digestion tank last spring at New York City's Owls Head Sewage Treatment Plant were reported by ENR Nov. 2, p. 23. Here two more investigators and another correspondent have a say:

SIR—I must take issue with certain statements and implications in the article.

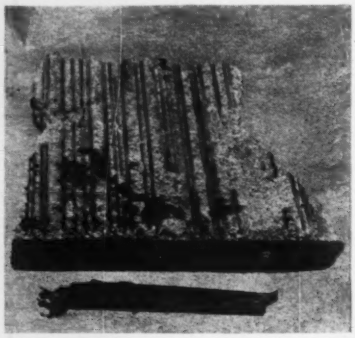
At the request of the contractor who was engaged in roof repairs to the tank at the time of the collapse, we conducted an investigation into the causes of this failure.

The ¾-in. sprayed concrete cover that was designed to protect the horizontal wires of these tanks against corrosion was completely interrupted at 24-in. intervals by vertical galvanized sheet metal channels, which received the dove-tail brick anchors. Most of these channels were badly corroded throughout their length, some so badly as to be completely disintegrated. There is abundant evidence that all wire corrosion initiated at these anchors and traversed horizontally in and around the wires; and that this attack on the wires had been under way for some time.

When the tank ruptured, the 24-in.-wide vertical strips of mortar cover were dislodged from the tank wall. The accompanying photograph shows the inside face of a typical piece of this cover. The wire grooves, which are plainly visible, are perfectly clean and free of rust except in the vicinity of the edge that is in contact with the rusted anchor channel. The channel itself in this instance was so badly corroded as to be unrecognizable in shape. The separate piece of metal visible in the photograph had been attached to the piece that remained bonded to the sprayed concrete, but tore off during handling of the specimen.

Field inspection of the corroded wires revealed a large number of places where there was a considerable loss in section every 24 or 48 in. on center, the amount of corrosion reducing sharply with distance from these points. In a few instances a length of wire which appeared only slightly rusted on the surface, when held at its ends and bent into a curve, would kink to reveal corrosion between the wire laminations at the kink.

Where more than one kink occurred, they were invariably spaced at a multiple of 24 in. This interlaminar corrosion is perfectly normal and consistent with the physical structure of wire; it indicates that for an extended time water had contacted the wire only at isolated points on the surface, and that corrosion had proceeded inward and along the wire from these points.



Fragment of protective cover for wire.

Wires showed for the most part only three types of breaks: (1) complete loss of section through surface corrosion; (2) partial loss from surface corrosion, followed by cup-and-cone fracture; (3) cup-and-cone fracture of wires not attacked by corrosion.

Only a very few cases of brittle fracture were observed, and these almost invariably had taken place only after a considerable portion of the wire section had been eaten away by general surface corrosion. Neither we nor our metallurgist consultant could find any evidence that stress corrosion was a primary cause of the failure. Indeed, all the facts available to us indicate that the role played by stress corrosion was insignificant. Furthermore, we did not observe any instance in which corrosion originated from the interior of the wire.

Insofar as the repair of the remaining tanks is concerned, there is no reason why consideration should not be given to replacement of the horizontal wires, and re-prestressing. Removal of the wires should offer no serious problem, since they expand when cut and cause the gunite cover to spall off. Re-prestressing of the tank would probably be most conveniently accomplished by use of high-strength cables, protected against corrosion by a suitable continuous cover of mortar. The vertically prestressed 12-in.-thick concrete core walls of the tanks are apparently in excellent condition, and should be fully capable of resisting the concentrated prestressing forces.

HOWARD SIMPSON
Simpson, Gumpertz & Heger, Inc.
Cambridge, Mass.

SIR—On 27 May, 1961, we were requested by Dr. H. Simpson, of Simpson, Gumpertz and Heger, to conduct a preliminary metallurgical examination on the high-strength steel wire in question. Thus we are acquainted with this particular case.

To imply that the wire could corrode internally without the introduction of the corrosive media from the outside is not only false but dangerous. Any steel part that has been worked or shaped has a fibrous structure, and almost all steels contain non-metallic inclusions to a greater or lesser extent. Does this mean that we must avoid using these materials for stress applications in corrosive environments? Certainly not. These materials were developed so that we could build bridges, tunnels, automobiles and the infinite multitude of items in our every day acquaintance. It does mean that there must be adequate protection from corrosion as there must be adequate protection from fire or any other such hazard.

Our findings in this case were that the prestressing wires failed because of a serious reduction in cross-section due to severe corrosion. It is true that the corrosion of the wire was somewhat accelerated by the stresses involved, but this we would consider minor. It is our opinion that annealed ferrous wire of the same chemistry, exposed to the same corrosion conditions, would have been deteriorated to much the same degree in the same period of time. Supporting this was our further findings that other steel parts from the same general area and exposed to the same conditions, even though not under severe stress, were very badly corroded.

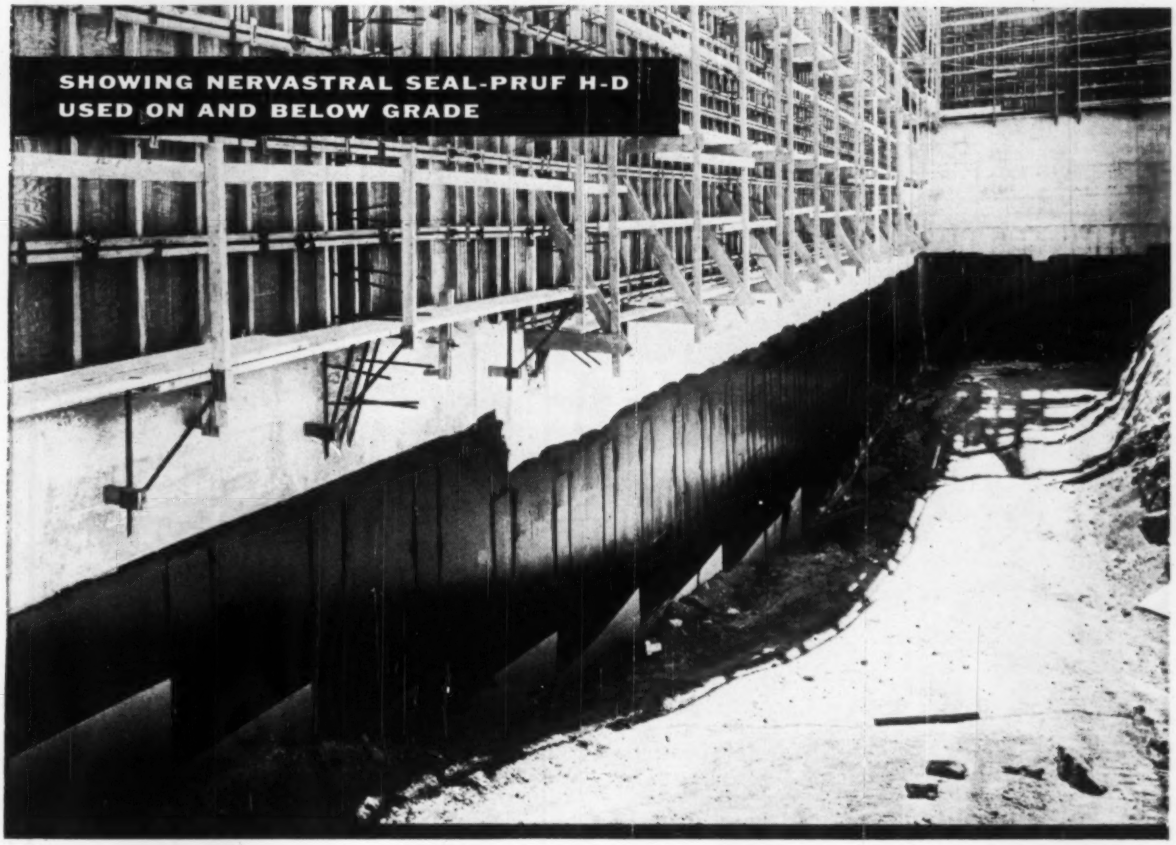
I noted that the remedy suggested is that of building a steel tank within the concrete tank. It is my sincere hope that careful consideration be given to the choice of steel for this since there will be stress concentrations at the weldments or otherwise fabricated joints. The combination of these stresses in the presence of the corrosive sludge environment definitely represents a potentially dangerous situation.

G. H. SILVER, P.E.
G. H. Silver & Associates
Newtonville, Mass.

SIR—A possible cause for the corrosion, and therefore the primary cause of failure, could have been tensile cracking of the tank shell because of exces-

(Reader Comment continued p. 20)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.



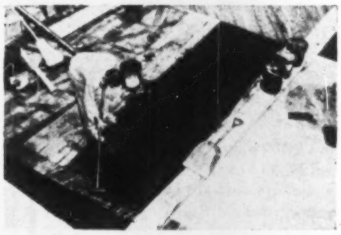
SHOWING NERVASTRAL SEAL-PRUF H-D
USED ON AND BELOW GRADE

Nervastral Seal-Pruf

NERVASTRAL

COMBINES ENGINEERING WITH MODERN CHEMISTRY IN PRODUCTS FOR MEMBRANE WATERPROOFING

NERVASTRAL Sheeting being installed for Membrane Waterproofing of foundations of a large government building in Florida.



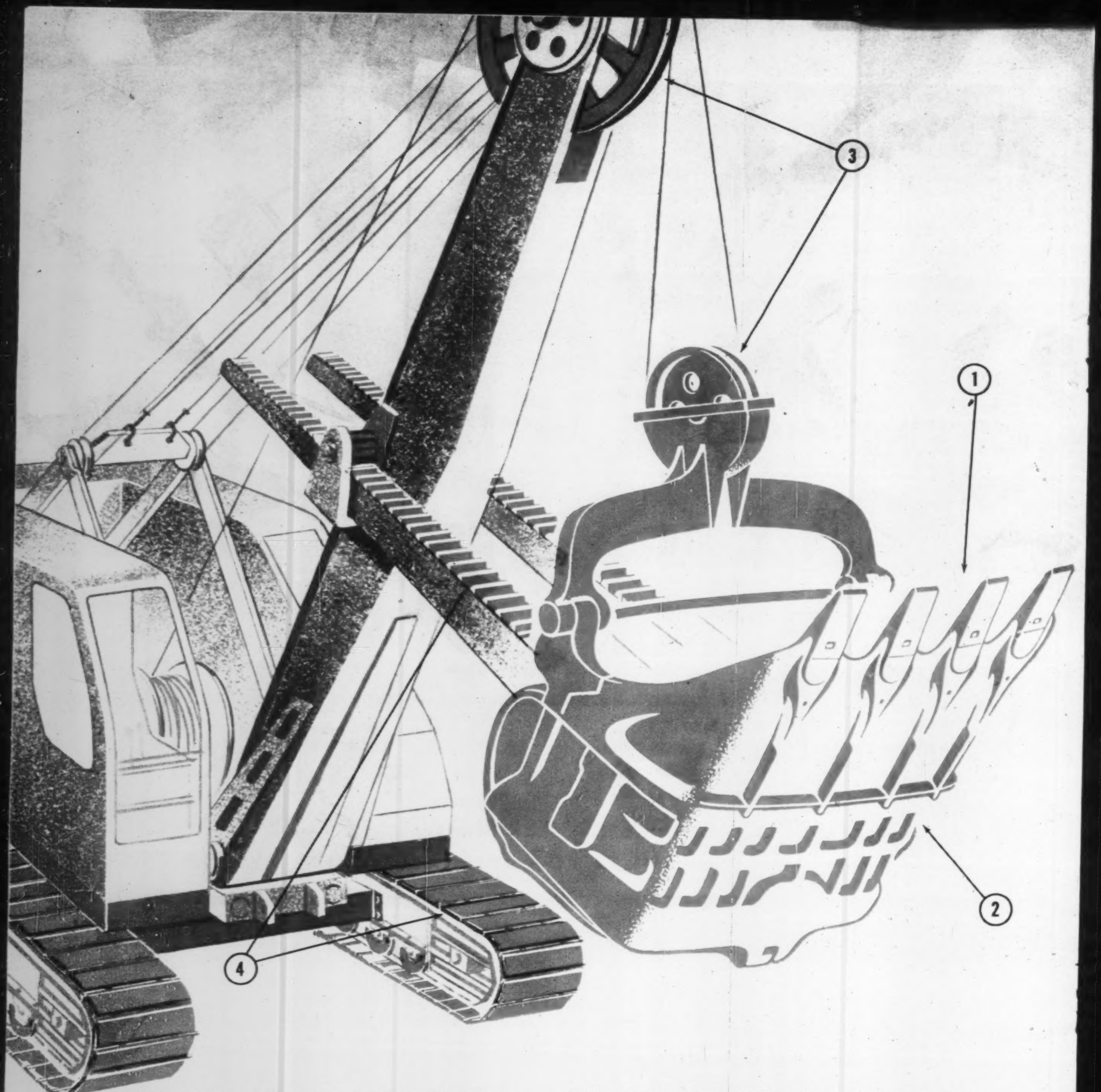
Installing NERVASTRAL H-D over roof of a utilities tunnel on the West Coast.

As the pioneer in the application of chemistry and engineering to waterproofing problems, Rubber & Plastics Compound Co., has developed and coordinated a group of related products and application systems which afford builders the utmost in the prevention of water penetration above and below grade. This company not only fabricates products designed for easy, economical installation but is also organized to furnish the engineering know-how to help you apply these products to assure the highest degree of impermeability.

Nervastral Seal-Pruf H-D Sheeting, shown in all three photos, is a long-lasting, impermeable plastic material that has many unique advantages when used for membrane waterproofing. It is inexpensive to apply, is not subject to fungi, mildew and chemical attacks, has resilience, is flexible at low temperatures, and has high abrasion and tear resistance. In waterproofing hard-to-do vertical areas, Nervastral Sheeting is less expensive and easier to apply.

"NERVASTRAL," "NERVA-PLAST" and "NERVA-KOTE" are proprietary names for a variety of waterproofing products that are favorably known to many architects, engineers and builders. Write for technical details and outline any special waterproofing problems for which you wish answers.

RUBBER & PLASTICS COMPOUND CO., Inc.
Time & Life Building • Rockefeller Center • New York 20, N. Y.



(1) Cut tooth costs up to 75% with Amsco Simplex 2-part reversible dipper teeth. Amsco Simplex teeth give you longer digging life while maintaining sharpness. Positive point-to-adapter pin locks stay tight under extreme conditions of impact, side blows, vibration or other shock. Simplex points stay on and are reversed in minutes per dipper. Replace present teeth with Simplex and measure the difference.

(2) Amsco dippers are made of manganese steel—"the toughest steel known"—containing 12-14% manganese. This tough steel provides as much as a 10 to 1 advantage over carbon steels under the abuse of impact and abrasion. Amsco manganese steel work hardens under impact, self-polishes under abrasion and is easy to weld when buildup or repair is needed. All types of dippers are made by Amsco—two-piece welded dippers, renewable-lip designs, Mesabi types, special dredge types and other styles to order.

(3) Worn sheaves shorten line life. Wire rope lasts longer when running in sheaves that stay smooth and even throughout their life. Ordinary flame-hardened steel or chilled cast iron sheaves score, wear and splinter. Splinters cut into wire rope. Amsco manganese steel sheaves work harden under repeated impact and acquire a polish that eliminates splinters. And when a high loading bangs the two sheaves together, Amsco sheaves take the beating without breaking.

(4) Tough, reliable Amsco crawler shoes give longer life for any shovel or backhoe. Amsco crawler shoes are available to fit every make of shovel or dragline and in special designs to order. Other Amsco shovel parts include racks, bevel gears, shipper shaft pinions, idlers, sprockets, dipper lips, fronts and doors. See your power shovel manufacturer for parts that give maximum service life and satisfaction.

TRUST THE COMPANY THAT BUILT YOUR SHOVEL

when ordering replacement parts

Manufacturers of power shovels and draglines can't take chances on inferior wear parts spoiling the good name of entire machines. That's why leading shovel manufacturers use dippers, teeth, crawler shoes, gears, racks and pinions, and sheaves made of Amsco Manganese and Alloy Steels.

They know, and so will you, that the same high quality found in original equipment castings is built into every Amsco replacement part offered. These parts will fit right and work right because they are designed to fit and be in balance on your equipment.

Your equipment manufacturer or his distributor is the best source of information on the *correct* parts to use—parts of genuine Amsco Alloy Steel.

AMERICAN **Brake Shoe** COMPANY

They're backed by experience...

AMSCO

AMERICAN MANGANESE STEEL DIVISION
CHICAGO HEIGHTS, ILLINOIS

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Other plants in: Denver • Los Angeles • New Castle, Delaware • Oakland, California • St. Louis
In Canada: Joliette Steel and Manitoba Steel Foundry Divisions
In Mexico: Amsco Mexicana, S.A.

CIRCLE 11 ON READER SERVICE CARD

An important Rieth-Riley project is the construction near Indianapolis of five bridges at the intersection of U.S. 52, Interstate 465 and Bypass 100. Here Miles Shookman checks service and delivery requirements with bridge superintendent H. P. Kunkler.

BY MILES SHOOKMAN

About the Author. Operating out of Indianapolis, Miles Shookman has the job of providing specialized service to construction contractors in his territory. A graduate of Indiana University, Miles is well qualified for this important assignment. He has been doing this work for much of the 15 years he's been with the company, and also attended the Company's Sales Engineering School.

* * *

Rieth-Riley Construction Company, Inc., is a large, highly diversified contracting firm with headquarters in Goshen, Indiana. As "Contractor Representative" for American Oil Company, I work closely with Rieth-Riley to provide the specialized service needed for construction operations. This means visiting widely scattered projects to make sure the company gets the right product in the right place at the right time—*always.*

Specializing in highway, bridge and street projects, Rieth-Riley owns and operates a large number of complicated and expensive pieces of equipment. Years of experience has taught the importance of uniform maintenance practices and consolidated fuels and lubrication programs. That's why Rieth-Riley depends on American Oil.

This is
AMERICAN OIL COMPANY
in action

CONSTRUCTION COMPANY GETS

DEPENDABLE PRODUCTS AND FAST TECHNICAL HELP

WITH AMERICAN
SPECIALIZED SERVICE

Rieth-Riley's president, Blair Rieth and general superintendent Harold Bowen review highway construction progress and servicing requirements with AMERICAN's Miles Shookman.

No matter what the fuel or lubrication need, or where it is needed, there is an AMERICAN product to do the job.

As for service, my assignment–for example–is devoted exclusively to serving construction firms in my area with the best products, prompt service and dependable technical help.

* * *

For the same kind of service contact the American Oil Company office.

Rieth-Riley Construction Company, Inc., Depends on These AMERICAN Products

*AMERICAN® PREMIER® Diesel Fuel
AMERICAN® Regular Gasoline
AMERICAN® S-1 Motor Oil
AMERICAN® S-3 Motor Oil
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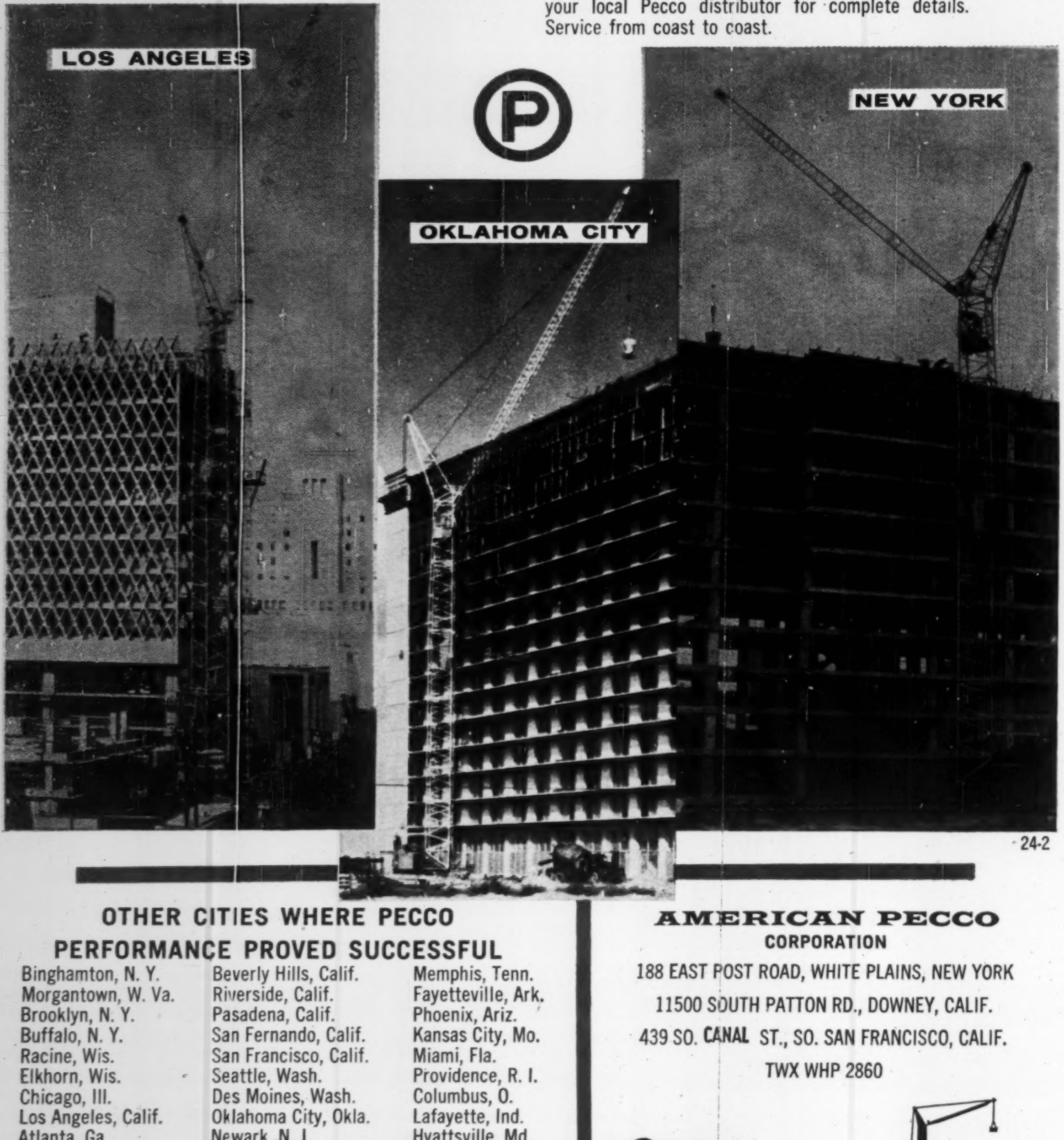
CIRCLE 13 ON READER SERVICE CARD

PECCO TOWERCRANES
REACH ACROSS THE NATION

From coast to coast satisfied contractors report outstanding results through their use of a Pecco Towercrane. Enthusiastically accepted as the most valuable single piece of equipment employed on a construction job, the Pecco has achieved a most significant breakthrough in mechanizing materials handling. Easily erected, simple to operate, the Pecco, with its tremendous reach and ability to travel under full load, can place materials on the exact spot where needed. This modern approach to building construction has resulted in the reduction of materials handling costs and construction time. Years of experience have proved Pecco Towercranes to be the most highly perfected machines available. See your local Pecco distributor for complete details. Service from coast to coast.



24-2

OTHER CITIES WHERE PECCO PERFORMANCE PROVED SUCCESSFUL

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Brooklyn, N. Y.
Buffalo, N. Y.
Racine, Wis.
Elkhorn, Wis.
Chicago, Ill.
Los Angeles, Calif.
Atlanta, Ga.
Dallas, Texas
Syracuse, N. Y.
Beverly Hills, Calif.
Riverside, Calif.
Pasadena, Calif.
San Fernando, Calif.
San Francisco, Calif.
Seattle, Wash.
Des Moines, Wash.
Oklahoma City, Okla.
Newark, N. J.
Ft. Lauderdale, Fla.
Santurce, Puerto Rico
Culver City, Calif.
Memphis, Tenn.
Fayetteville, Ark.
Phoenix, Ariz.
Kansas City, Mo.
Miami, Fla.
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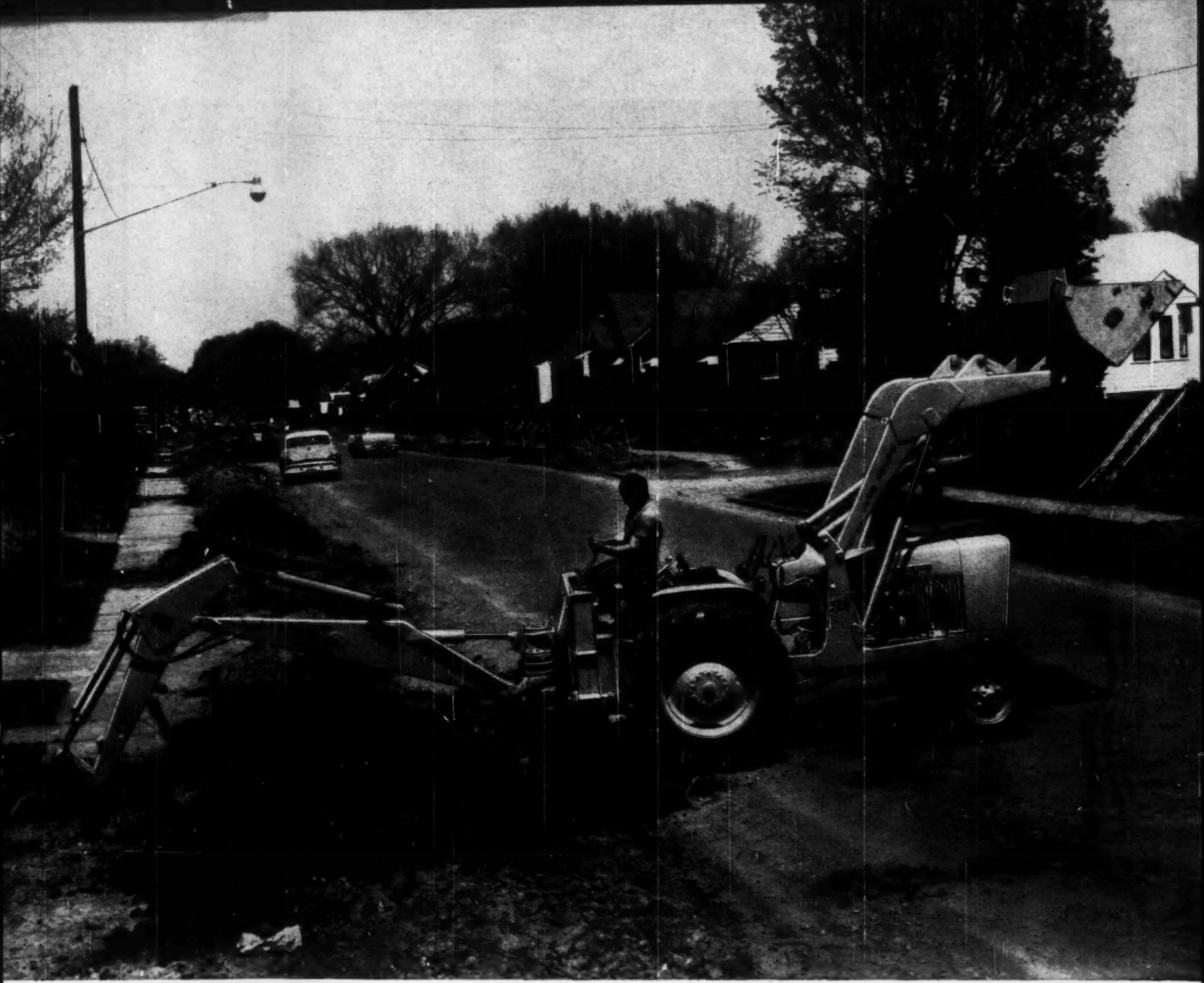
TWX WHP 2860

PECCO
SHORING EQUIPMENT

PECCO
TOWERCRANE



It's a 3010...for heavyweight stability above ground...better work 13½ feet down

Built for the big jobs, the new John Deere "3010" furnishes a steady platform for fast, efficient trenching, plus the high mobility only a wheel tractor can provide.

Two John Deere backhoes are available for "3010" work—the center-mounted 50, and five-position 51 for regular and offset digging. Each operates with simple two-lever control, has a 13-1/2 foot digging depth.

With a "3010," the operator sees his job through from start to finish in comfort. Adjustable, weatherproof backhoe seat is contoured fiberglas plastic. Tractor seat is adjustable to operator's height and clean platform provides easy off-on access. Low profile improves stability.

The unit is available with a choice of power—64 engine h.p. gasoline or 69 engine h.p. Diesel. Power steering and power brakes are standard. Constant-mesh transmission.

For a "3010" demonstration, contact your John Deere equipment dealer now through the yellow pages. Ask him about the advantages of the John Deere Credit Plan, and long-term leasing arrangements available. John Deere, 3300 River Drive, Moline, Illinois.

JOHN DEERE

LOADERS
BULLDOZERS
BACKHOES
AND
EARTHMOVING
EQUIPMENT

CIRCLE 15 ON READER SERVICE CARD

Rugged, every inch of the way

Cast iron pipe was made for tough jobs such as sewage disposal. It resists attack by sewage and sewage gases that require expensive linings in other types of pipe; it keeps sewage flowing smoothly.

Cast iron pipe performs a tough job. It stands up to external and internal loads, shocks and pressures. Bottle-tight joints *eliminate* seepage and infiltration at the most vulnerable points of your system.

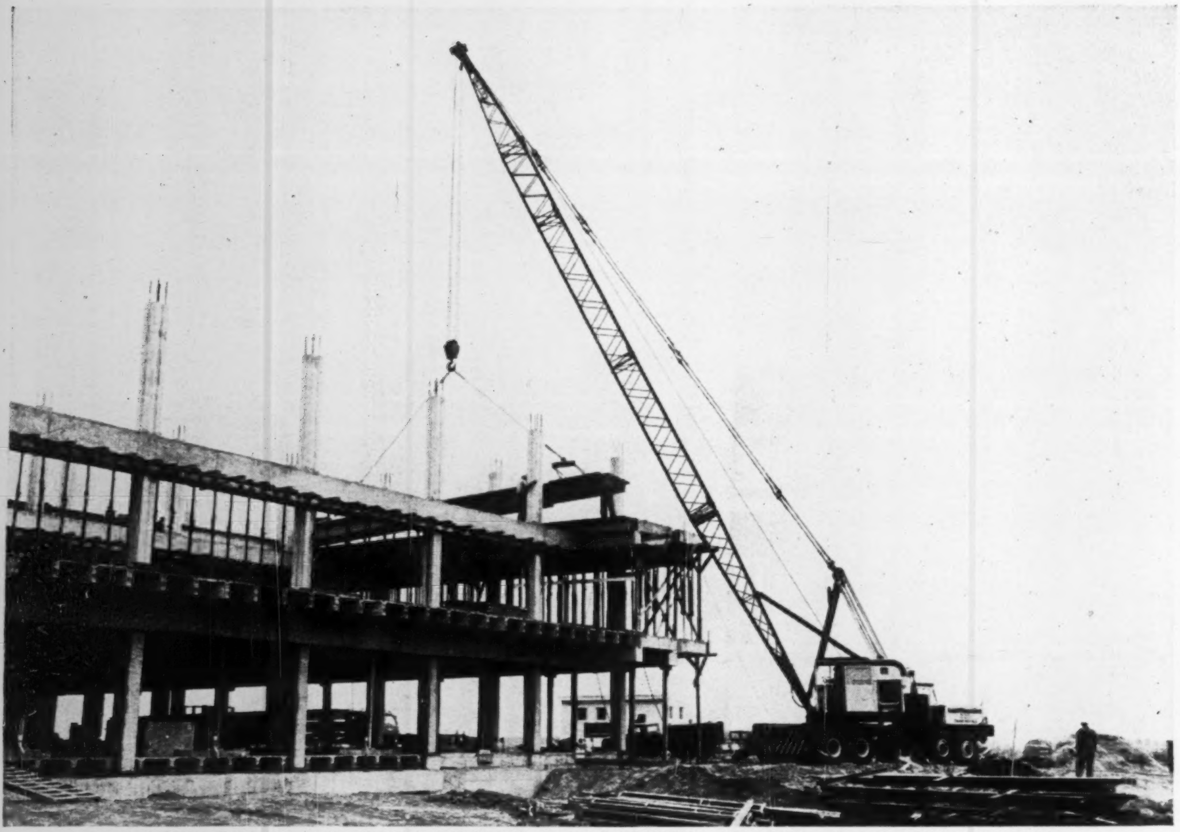
Cast iron pipe is rugged every inch of the way . . . and will remain so for over a century.

CAST IRON PIPE
THE MARK OF PIPE THAT LASTS OVER 100 YEARS

CAST IRON PIPE RESEARCH ASSOCIATION
Thos. F. Wolfe, Managing Director, 3440 Prudential Plaza, Chicago 1, Illinois

CIRCLE 17 ON READER SERVICE CARD

There's still nothing like a Moto-Crane®



Moto-Crane Service uses its 45-ton Lorain Moto-Crane model MC545 to place 8-ton, twin tee, prestressed concrete slabs at the third floor level of the new Kresge Library at Michigan State University, Oakland Branch, Pontiac, Michigan. A 90-ft. boom was used to handle the 52 ft. long, 5 ft. wide floor members. An average of 24 were set in an 8-hour day.

"This machine can lower a load on an egg without breaking its shell"

We didn't say it, but it's what the customers of Moto-Crane Service say about the precise job this 45-ton Lorain Moto-Crane MC545 does on their projects. Of course, this makes this Detroit rental service contractor happy. They go on to say, "We find it the most responsive and easiest machine to operate we ever owned and the boom mechanism is controllable to a fraction of an inch."

Wouldn't you like to own a rubber-tire crane that does this kind of a job? You can. Just call your Lorain distributor and get the full Moto-Crane story. We don't make every size of rubber-tire crane—no one does. But we do make most of them from 8 to 75 tons. And there is one to fit *your* needs—loaded with features that have kept Moto-Cranes out front since the first rubber-tire crane was introduced by Thew over 40 years ago.

If you are interested in putting more profit in your pocket, check on the Lorain Moto-Crane. Today. At your Lorain distributor.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

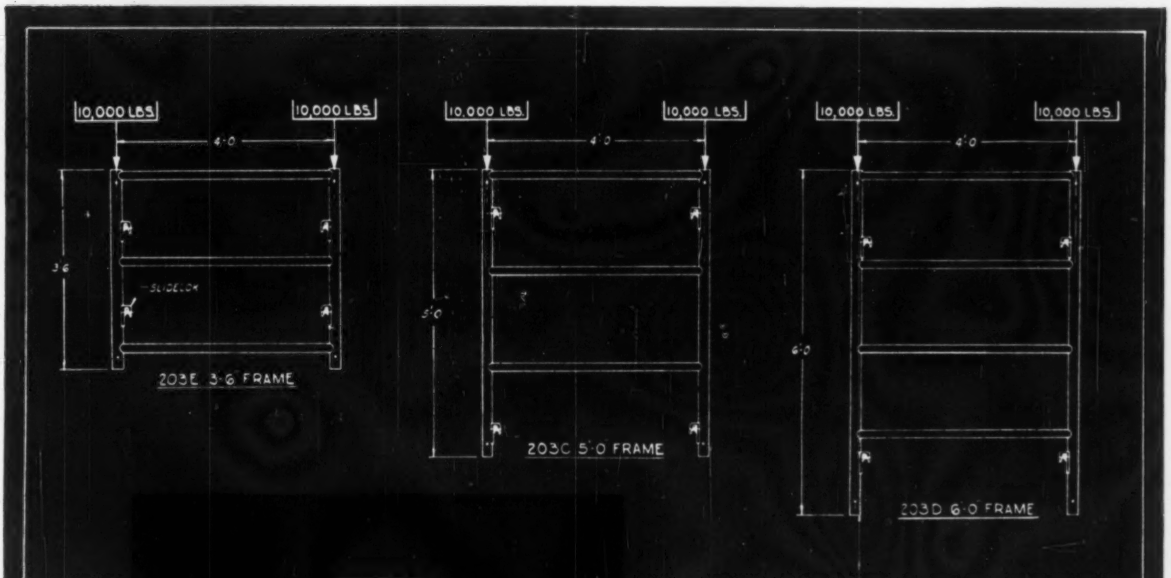
LORAIN®

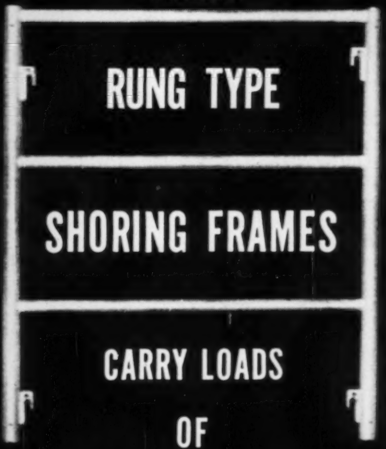
DOES MORE FASTER—FOR LESS

PLANTS in Lorain and Elyria, Ohio.

PRODUCTS—Power shovels, cranes, draglines, clamshells, and hoes on crawler from ⅜- to 2½-yard capacity · Cranes from 7 to 80 tons . . . on crawlers, and as rubber tire Moto-Cranes, and Self-Propelled Cranes · Rubber tire front-end Moto-Loaders in 6,000-lb., 7,000-lb., and 9,000-lb. operating capacities.

OUTLETS—Lorain products sold and serviced by 249 distributor outlets throughout the world.


10,000 LBS.
10,000 LBS.
4'-0
3'-6
SLIDELOK
203E 3'-6 FRAME
10,000 LBS.
10,000 LBS.
4'-0
5'-0
203C 5'-0 FRAME
10,000 LBS.
10,000 LBS.
4'-0
6'-0
203D 6'-0 FRAME



THESE

RUNG TYPE

SHORING FRAMES

CARRY LOADS

OF

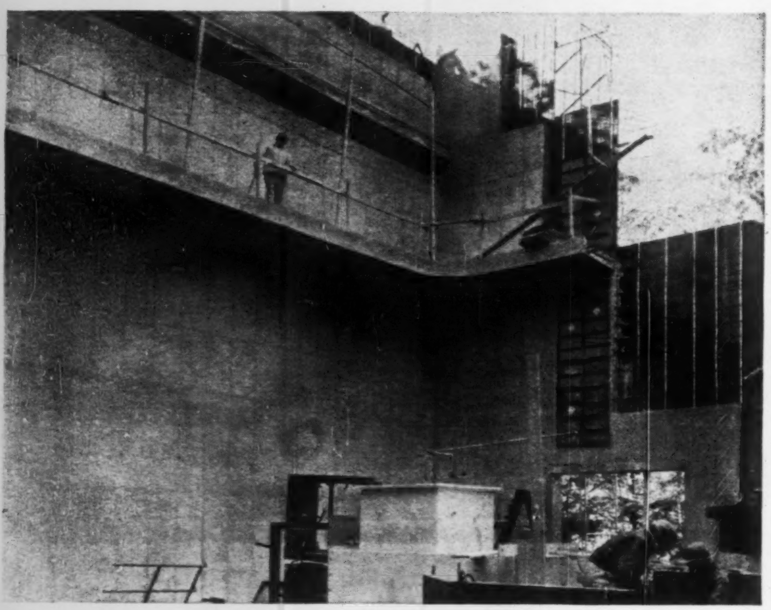
10,000 lbs.
on each leg

20K "Trouble Saver" Shoring frames are used extensively for supporting formwork for bridges and other types of construction involving heavy concrete loads. For complete details, write for Bulletin PSS-51.

The allowable load on this equipment has been developed through the use of test procedures recommended by the STEEL SCAFFOLDING AND SHORING INSTITUTE and a safety factor of 2.5 to 1.

THE PATENT SCAFFOLDING CO., Inc.
38-21 12th Street, Dept. ENR, Long Island City 1, New York
1550 Dayton St., Chicago 22 • Branches in all principal cities • 6931 Stanford Ave., Los Angeles 1
IN CANADA: CANADIAN PS CO., 329 DUFFERIN ST., TORONTO

Prefabs form cut-up job . . .



Catwalks, haunches poured together with Symons steel-ply forms

One of the best case studies of prefab form versatility in action was that of the atomic reactor facility for Cornell University at Ithaca, N.Y. On one phase of the project, the contractor, Rouse Construction Company, Gouverneur, N.Y. used Symons Steel-Ply Forms to pour monolithically the walk around the reactor, the catwalk and the haunch above it. Pours averaged about 16 feet high.

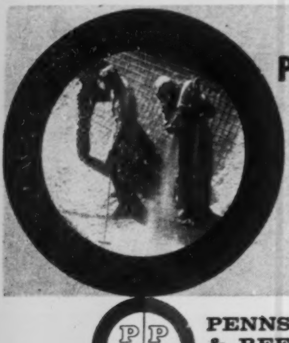
Symons Forms also showed their adaptability when forming was done around the complicated reactor machinery. It was imperative here that no ties be used in pouring the first six feet of the wall. To solve the problem, Symons Forms were simply attached together and the machinery itself acted as bracing. Some of the walls were as high as 45 feet when completed.

For complete information on Symons Steel-Ply Forms, write us. Ask also about our free engineering service . . . rental purchase options . . . and complete-line catalog.

Symons CLAMP & MFG. CO.
4265 Diversey Avenue Dept. M-1 Chicago 39, Illinois
Warehouses throughout the U.S.A.

MORE SAVINGS FROM SYMONS

CIRCLE 4 ON READER SERVICE CARD



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specialists in
BUILDING AND REPAIRING CONCRETE CONSTRUCTION
call us for information and bids:

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RESERVOIR LININGS
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sive loss of prestress. An analysis on p. 114 of the 1952 ASCE TRANSACTIONS showed that such losses could well be of the order of 60,000 to 80,000 psi in the steel rather than the 35,000 psi assumed for design, and it was predicted that the resulting tension in the concrete could lead to difficulties from corrosion of the small-diameter steel.

Whether excessive prestress loss was the primary cause of failure or not, we now know that safety demands the careful periodic inspection of the steel of tanks of this type.

HERBERT A. SAWYER, JR.
Professor of Civil Engineering
The University of Connecticut
Storrs, Conn.

No Glamor for Engineers

SIR—The spectacular photos and associated description of the new radio telescope structure (ENR Oct. 12, p. 23) at Stanford University might be an excellent article for posting on the current events bulletin board of the engineering schools. Due credit is given to those associated with the actual fabrication and erection of the structure. However, the article states "Stanford Research Institute scientists, who designed the telescope and its supporting structure, expect to conduct radar and radio explorations of the solar system before the year ends."

Unquestionably, scientists were responsible for formulating certain scientific performance specifications for the structure, and scientists will obviously conduct the explorations with the operational facility. However, did scientists design the structure and its supports? Do these scientists belong to The American Society of Civil Engineers and are they registered professional engineers in the State of California?

Depending on the answer to these questions, one might draw one or more of the following conclusions:

1. Engineers are no longer necessary, especially on challenging and glamorous problems, because scientists now handle such problems.

2. No distinction is to be made between scientists and engineers. Scientists practice engineering and engineers may appropriately be called scientists.

3. A proper follow-through would call for future references to The American Society of Civil Scientists and registered professional scientists.

4. If a young man wants to design large radio telescope structures and similar challenging structures, he should become a scientist by being a physics major in college.

The above conclusions will be labeled as ridiculous by the average ENR reader, who knows better. However, the average high school student and college freshman does not know better.

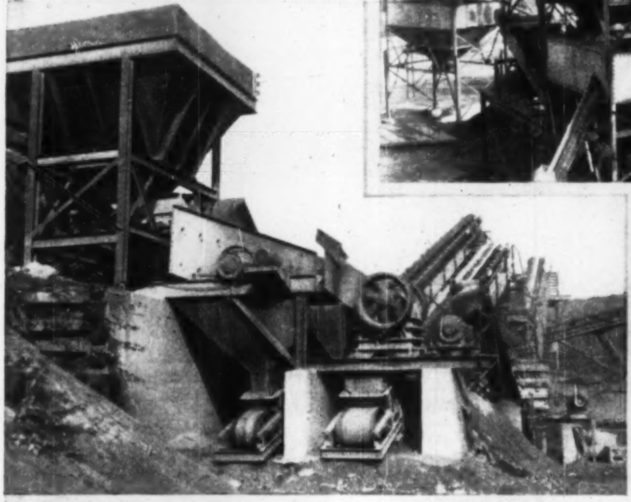
(Reader Comment continued p. 35)

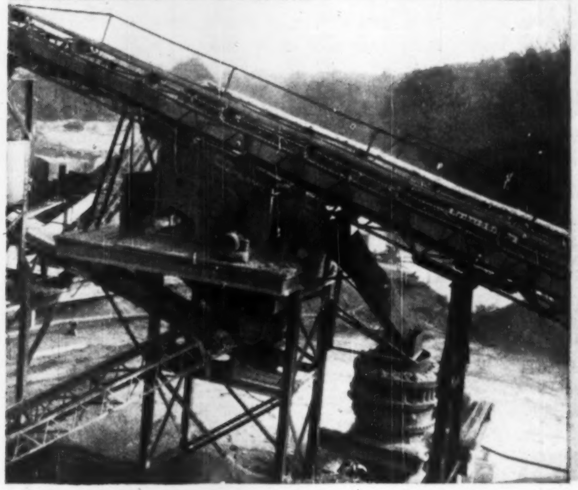
TELSMITH® *designed* for extreme flexibility with a wide variety of products

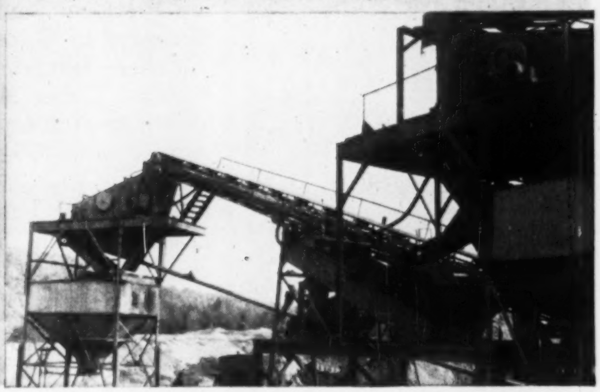
TELSMITH EQUIPMENT in this plant has two circuits: one with 24″ x 5′ Plate Feeder, 4′ x 10′ 2-deck Scalper, 4′ x 12′ 3-deck Vibro-King wet screen, 20″ x 15′ Twin Screw Classifier for concrete sand, 48″ x 30′ Sand Drag for mason sand. Gravel circuit has 10″ x 30″ Jaw Primary Crusher, 4′ x 10′ 1-deck Vibro-King dry sizing screen, 36-FC Gyrasphere Secondary Crusher, and a second 4′ x 12′ 3-deck Vibro-King wet screen.

This plant was tailor-made by Telsmith to produce aggregates for its owner's bituminous concrete plant, and for commercial use in the area. Products are Pennsylvania Highway Dept. specs Nos. 3A, 2A, 2B, 1B, Class A concrete sand, mason sand, and asphalt sand. In addition, minus 1″ and minus ½″ round gravel may be extracted and blended into final product either crushed or uncrushed when making crushed concrete specs. Plant capacity is 100-125 tph. Plant was designed and its Telsmith equipment supplied by A. R. Amos Co., Telsmith distributor, Philadelphia, Pa. *Send for Bulletin 266.*

G-33-960







▲ **Keystone Pavement & Construction Co. Lake Ariel, Pa. plant (general view).**

◀ **24″ x 5′ Plate Feeder, 4′ x 10′ 2-deck dry Scalper, 10″ x 30″ Jaw Primary Crusher.**

◀ **4′ x 10′ 1-deck Vibro-King sizer screen and 36-FC Gyrasphere Secondary Crusher.**

▼ **Two 4′ x 12′ 3-deck Vibro-King wet screens, 20″ x 15′ Twin Screw Classifier, 48″ x 30′ Sand Drag.**

TELSMITH MILWAUKEE WIS. U.S.A.

SMITH ENGINEERING WORKS
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DIVISION OF Barber-Greene

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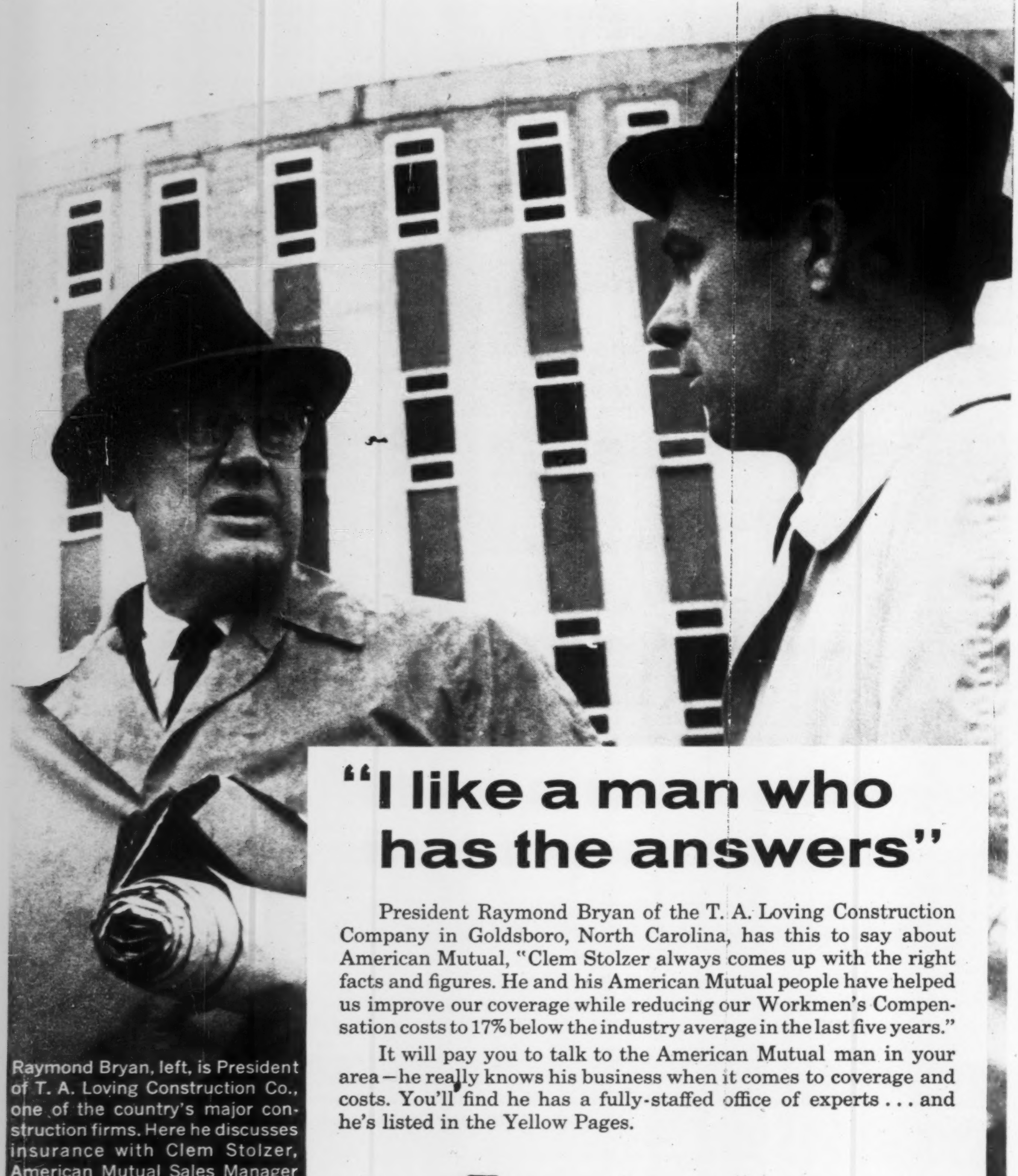
CIRCLE 21 ON READER SERVICE CARD


"I like a man who has the answers"

President Raymond Bryan of the T. A. Loving Construction Company in Goldsboro, North Carolina, has this to say about American Mutual, "Clem Stolzer always comes up with the right facts and figures. He and his American Mutual people have helped us improve our coverage while reducing our Workmen's Compensation costs to 17% below the industry average in the last five years."

It will pay you to talk to the American Mutual man in your area—he really knows his business when it comes to coverage and costs. You'll find he has a fully-staffed office of experts . . . and he's listed in the Yellow Pages.

Raymond Bryan, left, is President of T. A. Loving Construction Co., one of the country's major construction firms. Here he discusses insurance with Clem Stolzer, American Mutual Sales Manager in Raleigh, N. C., in front of a new Loving project — the Harrelson Hall classroom building on the North Carolina State campus.

American Mutual
AM
LIABILITY INSURANCE COMPANY
©1961, American Mutual Liability Insurance Company, Wakefield, Massachusetts

ALLIS-CHALMERS

One of three 96-inch **Howell-Bunger** valves in operation at the U. S. Engineers Mud Mountain Dam, White River, Wash.

2 ways to air-cushion a big splash

...and provide easy regulation of free discharge

***Howell-Bunger* valves** produce an expanding, aerated water jet that dissipates tremendous energy with minimum erosion and cavitation — and virtually no vibration. They're ideal for free discharge with high to low heads, into atmosphere or water. Lowest in initial cost . . . economical to install (need pipe line or conduit of *minimum* size). Only one moving part in contact with flow.

***Ring-Jet* valves** yield a concentrated, aerated jet, perfect for locations requiring reduced spray. A logical development from the *Howell-Bunger* valve, they offer many parallel advantages . . . are equally suited to high and low heads.

Only Allis-Chalmers is geared to equip complete hydro installations — turbines, generators and auxiliaries. Contact our office in your area for information. Or write ***Allis-Chalmers,*** *Hydraulic Division, York, Pennsylvania.*

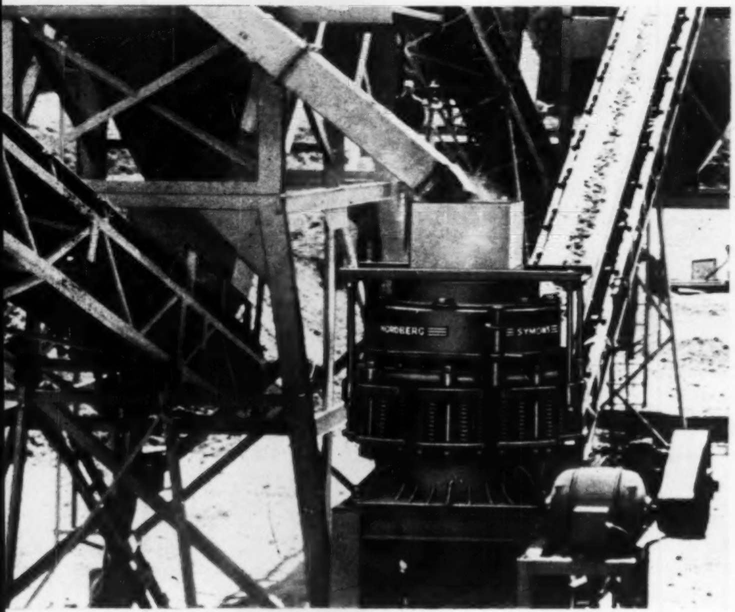
A-1256

One of two RING JET valves used for irrigation bypass from Tulloch Dam, California.

For jet runways and high speed turnpikes . . .

SYMONS® CONE CRUSHERS

produce big tonnages of quality construction materials at low cost per ton



Symons Cone Crushers are built in Standard, Short Head and Intermediate types with crushing heads from 22″ to 10′ in diameter, in capacities from 6 to over 1500 tons per hour. Shown above is a typical Symons Cone Crusher installation, producing large tonnages of quality aggregates.

At left is a view of the Fort Worth Interchange, on the Dallas-Fort Worth Turnpike. The inset view shows a jet taking off from one of the modern concrete runways at Chicago's O'Hare International Airport. These are but two of the many examples of the contributions being made by the construction industry in the interest of improved transportation.

Construction for today's transportation needs is highly competitive big business. Competition these days is rough . . . bids must be kept low. More often than not, profit depends on equipment you can rely on for day-after-day output of high tonnages of specification material at low per-ton cost.

Symons Cone Crushers meet these demands for production at a profit. Their unequaled record for consistent dependability under the toughest crushing conditions, low maintenance costs, and high capacity production of finely crushed construction materials is known to contractors, operators and engineers all over the world.

Available for stationary, portable and semi-portable service, Symons Cone Crushers—like all Nordberg machinery and equipment for the construction industry—have become *first choice where maximum output at lowest possible cost is needed.*

SYMONS . . . *a registered Nordberg trademark known throughout the world.*

NORDBERG MANUFACTURING COMPANY, Milwaukee 1, Wisconsin

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C361-R

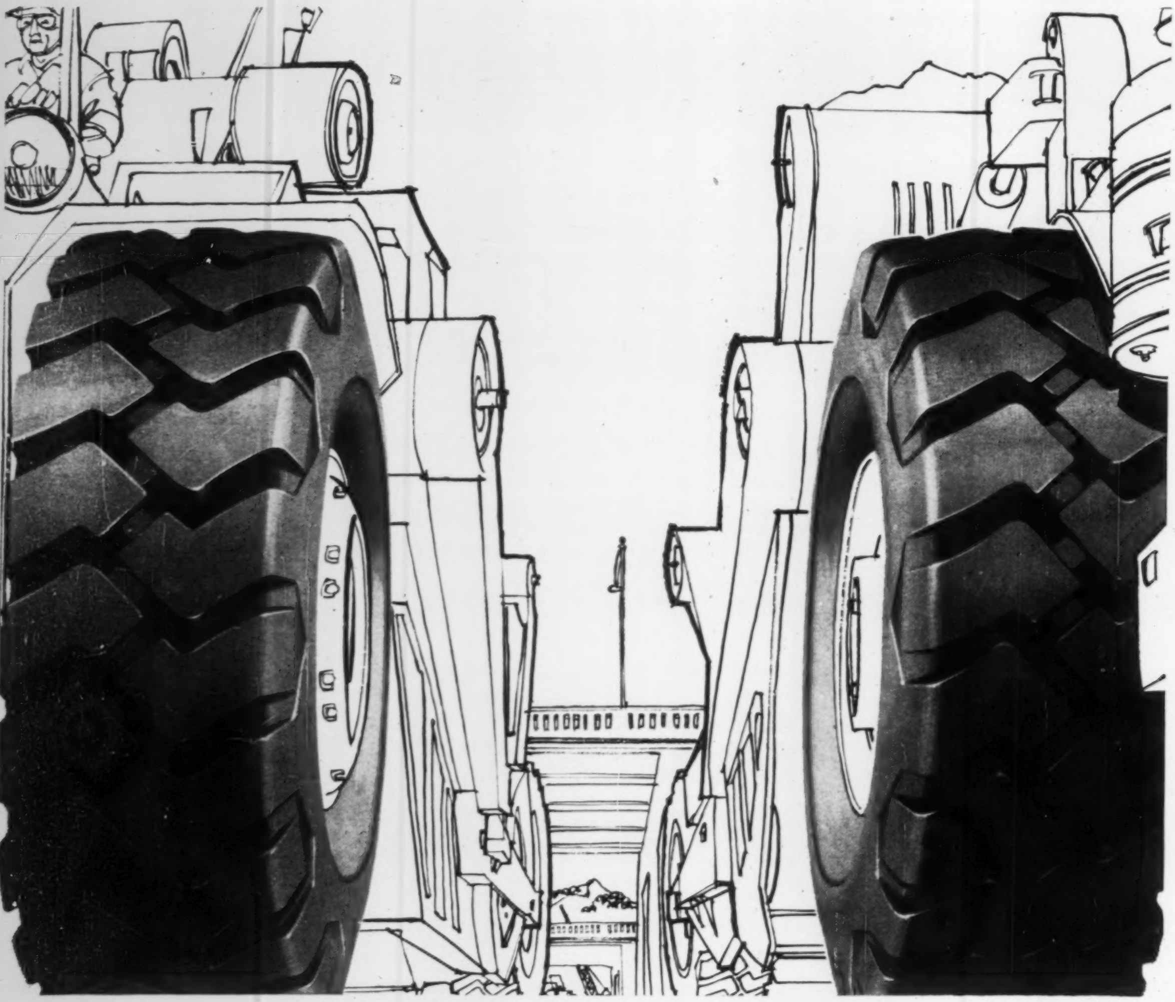
CIRCLE 25 ON READER SERVICE CARD

WHEN SO MUCH DEPENDS ON YOUR TIRES . . .

COUNT ON FIRESTONE TO BEAT TOUGH SCHEDULES!

Construction job records prove that the built-in stamina of Firestone Super Rock Grip Wide Base giant tires cuts downtime, keeps equipment rolling on schedule. With the super strength of Firestone Rubber-X and Shock-Fortified nylon cord bodies, they take the most punishing blows from rocks, stumps, snags—and roll right on to get the job *done.*

Always on call, too, is a Firestone Tire specialist to help you solve *any* tire trouble (he can often spot potential problems before they arise!). To multiply production *and* profits with this *Firestone team*—Giant Tires plus Giant Tire Service—simply call your Firestone Dealer or Store.



Firestone

Always Specify Firestone Tires When Ordering New Equipment

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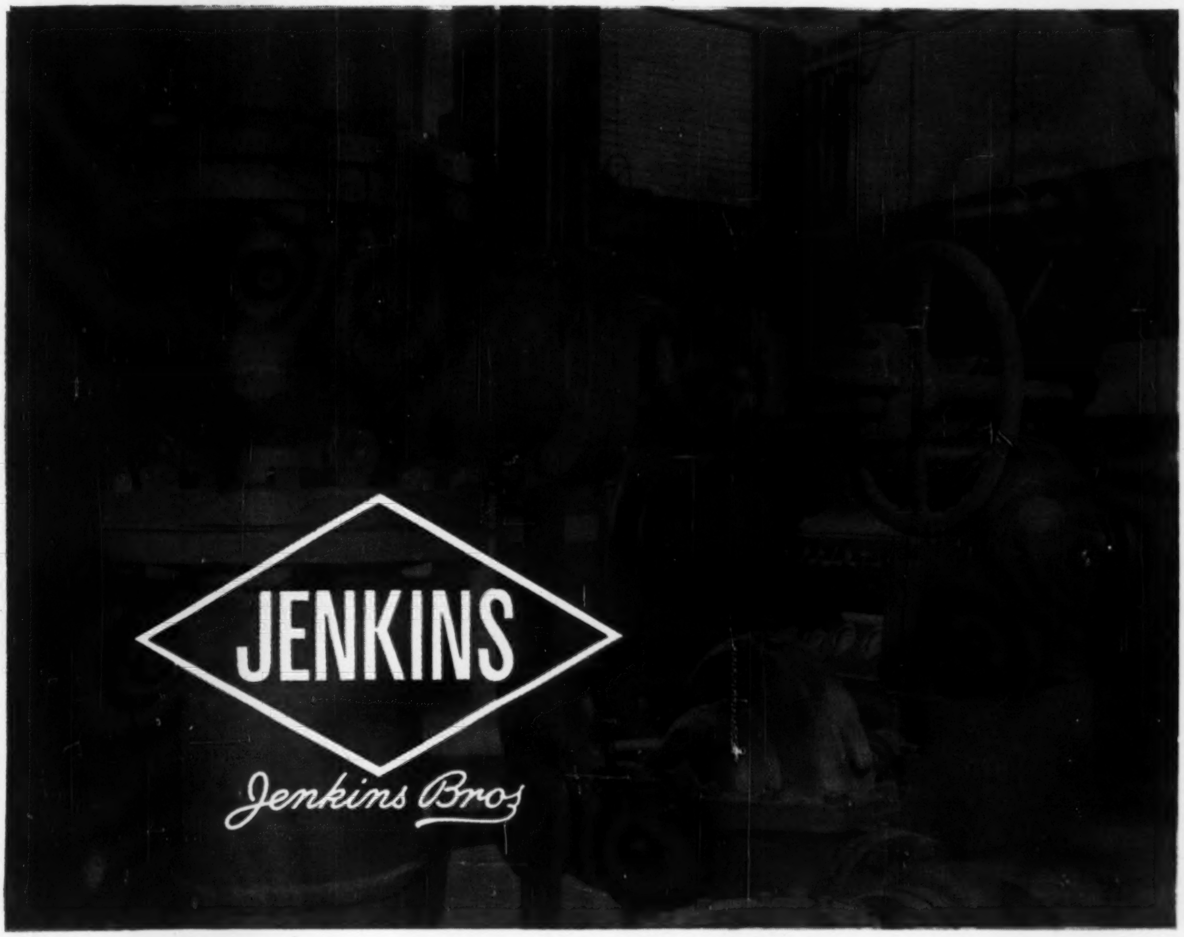

The Sign of a Real Bargain in an IRON BODY GATE

Cost-Per-Year is Lower... Initial Cost no Higher

For generations extra-quality, extra-stamina Jenkins Iron Body Gates were regarded as the best buy for the money . . . even though they cost more to buy. Lower maintenance expense and extra years of service more than offset any price differential.

Today, these widely favored valves are an even bigger bargain in true value. *You pay no more for them at the start!* And you get exactly the same high quality and perfection of design for your money.

You can satisfy all your needs from the complete line of Jenkins Iron Body Valves. Jenkins Bros., 100 Park Avenue, New York 17.

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MOST TRUSTED TRADEMARK IN THE VALVE WORLD
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JENKINS ®
SINCE 1864
Jenkins Bros

Read about the most important development

A recent Cyclone Fence development promises to revolutionize industrial fencing throughout the United States. After years of vigorous research, and production line debugging, we are manufacturing an aluminum-coated steel fence of such high quality that we are willing to give it the Cyclone name. Nine years of field testing indicate that no other type of fence can economically match Cyclone Aluminum-Coated Fence's combination of corrosion resistance, tensile strength and heat resistance. Yet the price is only slightly above first-quality galvanized steel fence.

FIRE RESISTANCE

In a brush or debris fire, not uncommon along a fence line, temperatures can easily climb to the 1,300° mark. If the fence fabric melts, your property protection goes with it. The steel in Cyclone Aluminum-Coated Fence will not melt at temperatures below 2,850°. Repeated tests have shown that our aluminum-coated fabric can withstand temperatures as high as 1,650° and still retain its protective coating, and 2,000° for brief periods without the destruction of a single strand of wire.

STRENGTH

The steel wire used in Cyclone Aluminum-Coated Fence has a minimum tensile strength of 80,000 psi, and that strength is retained as long as the coating remains intact. What does this strength mean to you? In actual tests, USS Cyclone Aluminum-Coated Fence was rammed by a car traveling at 35 mph. Not a single strand of wire was broken. ■ Buyers must not underestimate the necessity for strength in industrial fence. If you could "fence your fence" to protect it there would be no problems. But fence has to stand alone, and withstand vandals, sideswiping vehicles, and all sorts of mechanical abuse.

Protect it with USS CYCLONE

in the history of property protection fence

CORROSION RESISTANCE

Our Research and Metallurgical people have found accelerated weathering and salt spray tests are misleading, therefore the following data is from actual service records: After 9 years of continuous corrosive attack in a severe industrial atmosphere, Cyclone Aluminum-Coated Fence shows practically no deterioration. Even after 9 years of severe marine exposure, 90% of the surface was free of corrosion.

PRICE

The normal market prices for USS Cyclone Aluminum-Coated Fence are only slightly above prices for galvanized chain link fence. And remember, for this very slight premium you're getting the combination of aluminum and steel that gives you superior corrosion resistance and long lasting strength.

KNOW THE BRAND

Cyclone is a brand name, not a type of fence. When you buy USS Cyclone you're getting a fence that's pre-engineered, prefabricated down to its smallest part. The Cyclone-developed H-Post is built like a steel beam for extra strength; Cyclone gates are sleeve-constructed—not welded—so they can be easily repaired; one-quality, full-weight fabric; deep-set post installations that don't skimp on concrete or steel, and professional installation by long-time Cyclone crewmen who know how to put up a fence to stay. ■ USS Cyclone has sales offices all over the country and a reputation built on the fact that Cyclone is the most widely used property protection fence in the world. Cyclone Fence is backed by the American Steel and Wire Division of United States Steel—a company that will be around tomorrow to live with what it sells today. ■ 69 CYCLONE BRANCH OFFICES. Cyclone has 69 branch offices throughout the country. Which means, wherever you are, we're reasonably close by. Give us a call next time you need fence around your company's property. Check your Yellow Pages under "Fence." For a brochure on new Cyclone Aluminum-Coated Fence, write American Steel and Wire, Rockefeller Building, Cleveland 13, Ohio.

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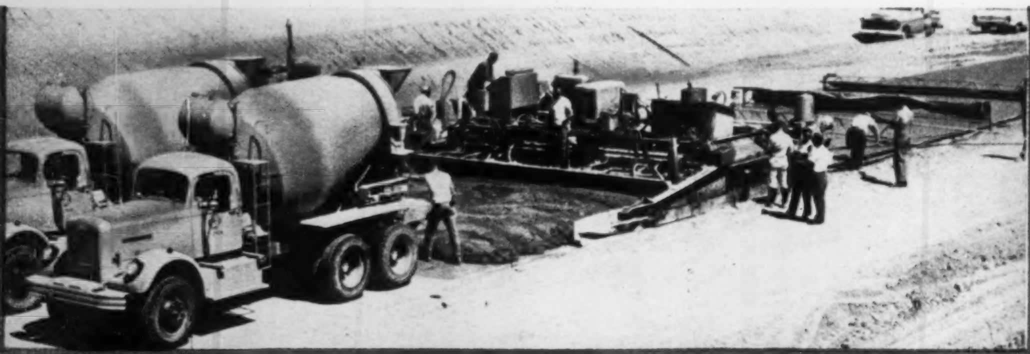
Steel For safety, dependability, economy.

USS **American Steel and Wire**
Division of
United States Steel

REX alone offers you...

AUTOMATED ROAD-PAVING EQUIPMENT TO MEET ANY NEED!

Here are the two most advanced, cost-cutting methods of concrete road paving today! Now you can automate your jobs with 1-machine, 1-operator—*and do all three:* spread, finish, float. The methods are proved—the machines fully perfected—ready right now to help you pave more and do it more accurately and economically—profit more! For central-mix, dual-drum pavers or truck-mixer operations.



REX SLIP-FORM PAVERS. This single versatile, self-propelled machine performs all functions of the complete paving spread. Works with one operator at rapid, continuous rate. Eliminates need for forms and form-setting crews. Places reinforced or non-reinforced slabs. Handles all established slumps. Gives precision finishing results. Easily transported. Adjusts for slab widths up to 25′. *Ask about it!*

REX-O-MATIC. Newest concept in form-riding paving equipment—one machine, just one operator to do the complete spreading, finishing, floating job! Produces specified surface tolerances. Handles jobs of all sizes. One power source operates all functions. For single- or two-course paving jobs, to meet your production requirements. Performs at speeds up to 12½′ per minute on 24′ wide, 10″ thick interstate work. *Ask about it!*

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CONSTRUCTION MACHINERY

SEE HOW you can modernize your paving operations with a Rex Slip-Form Paver or Rex-O-Matic. Write for detailed literature or call your Rex distributor. CHAIN Belt Company, 4633 W. Greenfield Ave., Milwaukee 1, Wis., Los Angeles 22. In Canada: Rex Chainbelt (Canada) Ltd., Willowdale, Ontario.

U.S.F. & G. bonds more construction – year in, year out – than any other insurance or surety company.

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How to fasten steel to concrete:

(Old way)

1. Mark off anchor spacing on steel
2. Put proper drill in the drill motor
3. Drill the hole through the steel
4. Plot location of holes in concrete
5. Connect impact hammer to power
6. Install the proper chuck and head
7. Place self-drilling anchor in chuck
8. Now drill the hole in the concrete
9. Remove the anchor from the hole
0. Clean hole by removing chippings
11. Expander plug into anchor shell
12. Reposition the anchor in the hole
13. Drive plug into the expander shell
14. Break the head off the anchor
15. Place the steel in proper position
16. Insert bolt through holes in steel
17. Screw nut on, tighten with wrench

(Ramset way)

1. Insert Ramset fastener into the tool
2. Insert Ramset powder charge in tool
3. Depress tool on work and pull trigger

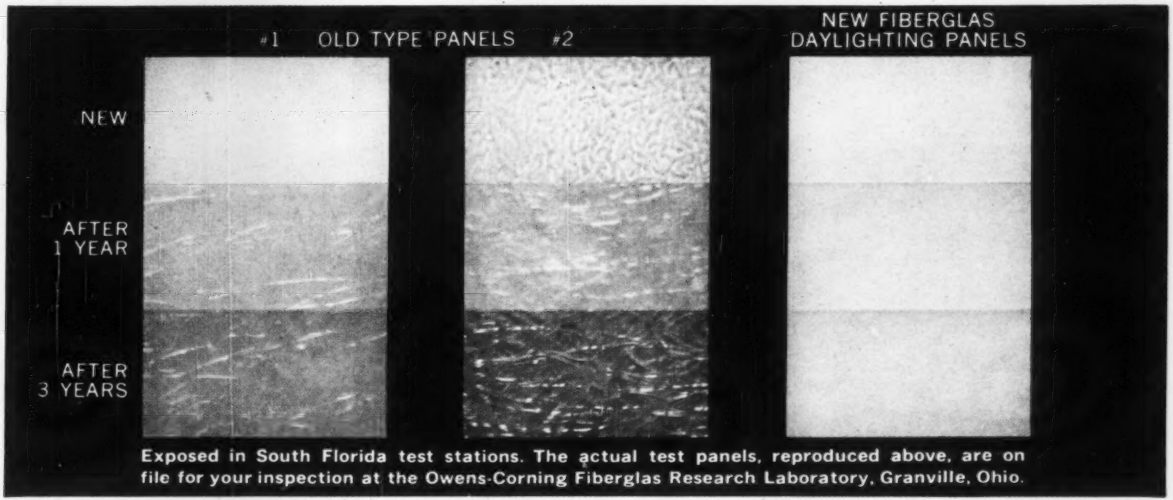
Ramset powder-driven fastenings average less than 30 seconds each. Regardless of materials. Steel to concrete or steel. Wood to concrete or steel. Including labor, Ramset reduces the cost-per-fastening a good 54% (often, much more). With no sacrifice in holding power.

Ramset® WINCHESTER-WESTERN DIVISION **Olin**
287-L Winchester Ave., New Haven 4, Conn.

CIRCLE 32 ON READER SERVICE CARD

TESTS PROVE IT:

FIBERGLAS DAYLIGHTING PANELS WITH DU PONT LUCITE® FIGHT WEATHER BEST

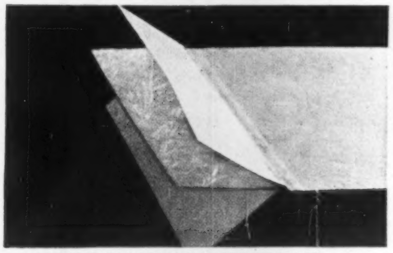


Exposed in South Florida test stations. The actual test panels, reproduced above, are on file for your inspection at the Owens-Corning Fiberglas Research Laboratory, Granville, Ohio.

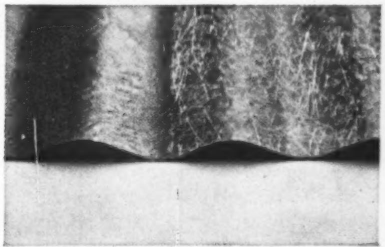
After three years weathering exposure, old type panels show: severe discoloration; extreme fiber "blooming"; up to 60% loss in light.

After three years weathering exposure, Fiberglas Daylighting Panels show: no discoloration; no fiber "blooming"; less than 10% loss in light transmission.

THIS OUTDOOR EXPOSURE TEST . . . conducted by an independent testing service . . . proves conclusively that Fiberglas* Daylighting Panels stand up best to weather. What makes this amazing weather resistance possible? The combination of Du Pont Acrylic Lucite Sirup Resins *and* tough Fiberglas reinforcing. Together they form a strong, shatter-proof panel that is easy to install . . . one that allows you to choose color and light transmission properties *and know they will not be altered by years of weather exposure.* Use Fiberglas Daylighting Panels next time you want to open up dim interiors . . . let in natural daylight . . . reduce lighting costs . . . replace old sash and glass. For complete product data write to Owens-Corning Fiberglas Corporation, 717 Fifth Avenue, New York 22, New York.



WEATHER-RESISTANT ON BOTH SIDES! The surface mat of very fine glass filaments is applied to *both* sides of the Fiberglas reinforcing mat, to hold the resin on the surface where it is needed most.



NO SURFACE MAT MEANS NO PROTECTION! For 18 months this ordinary plastic panel was exposed to weather. See how fibers have "bloomed" in exposed portion to the right. Fibers collect dirt and fumes, ruin panel's appearance, cut down light transmission.

SAVE ON SASH, GLAZING, INSTALLATION! Fiberglas Daylighting Panels cost less installed than glass and sash in any type construction. No special tools needed. Fiberglas configurations install and nest with metal siding and roofing, are also available in flat sizes to fit standard sash.

OWENS-CORNING RESEARCH pioneers new ideas in OWENS-CORNING FIBERGLAS

*T.M. (Reg. U.S. Pat. Off.) O-C. F. Corp.
®Reg. T.M. Du Pont Acrylic Lucite Sirup

R
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STOP
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RIGHT
OF
WAY

Now...*one* coat of enamel combines rust inhibition, durability and color retention

For the first time these three factors can be provided in one paint containing M50® pigment.

Here's news of a new type of enamel that greatly simplifies the painting of highway signs.

With these new enamels, *one coat* is all that is needed. This single coat combines . . . for the first time . . . more rust inhibition than ordinary primers with even greater durability and "color fastness" than most finish paints. What's more, except for white, these enamels can be made up in all the colors normally used in highway sign painting.

A unique new pigment . . .

M50® basic lead silico chromate . . . gives the one-coat enamels their exceptional properties. In this pigment, one of the most effective of all rust inhibitors, basic lead chromate, is solidly fused to an inert core. In metal protective paints, exposure tests have proved that this pigment maintains high rust inhibiting activity for years and substantially retards color fading.

Greatly inhibits under-the-film rust creepage, as well

As you have probably noticed, when ordinary enamels are nicked or damaged in service, the rust that starts spreads under the paint in no time. As this rust creepage continues, paint flakes off to open the way for further corrosion. The new *M50* one-coat enamels greatly reduce such premature destruction of the paint film . . . help keep sign repainting needs down.

Before you order paint again . . .

Look into these unusual new enamels. They can be made up by your regular suppliers in standard colors.

M50 an **oncor** Pigment...
A Development of **National Lead Company**

General Offices: 111 Broadway, New York 6, N. Y.

Indeed, the above are quite typical student conclusions. Practically every item in the popular press credits the scientists with every engineering achievement worthy of news coverage. Few realize how deadly serious this problem is becoming. Nor will it be solved in the next decade (sufficient time for the public to rediscover the challenging problems of mankind on earth which engineers are solving).

My purpose in writing is not to criticize ENR but to ask for your help. We want scientifically inclined students to elect civil engineering, and we want civil engineering students to be well educated in scientific fundementals. The engineering educators can handle the latter. However, you have the strongest voice in the former.

C. L. MILLER
Director
Civil Engineering Systems Laboratory
M.I.T.
Cambridge, Mass.

Editor's Note—ENR asked essentially the same questions that Mr. Miller asks. We were informed that scientists supervised all design, including structural.

Let Private Agency Do It

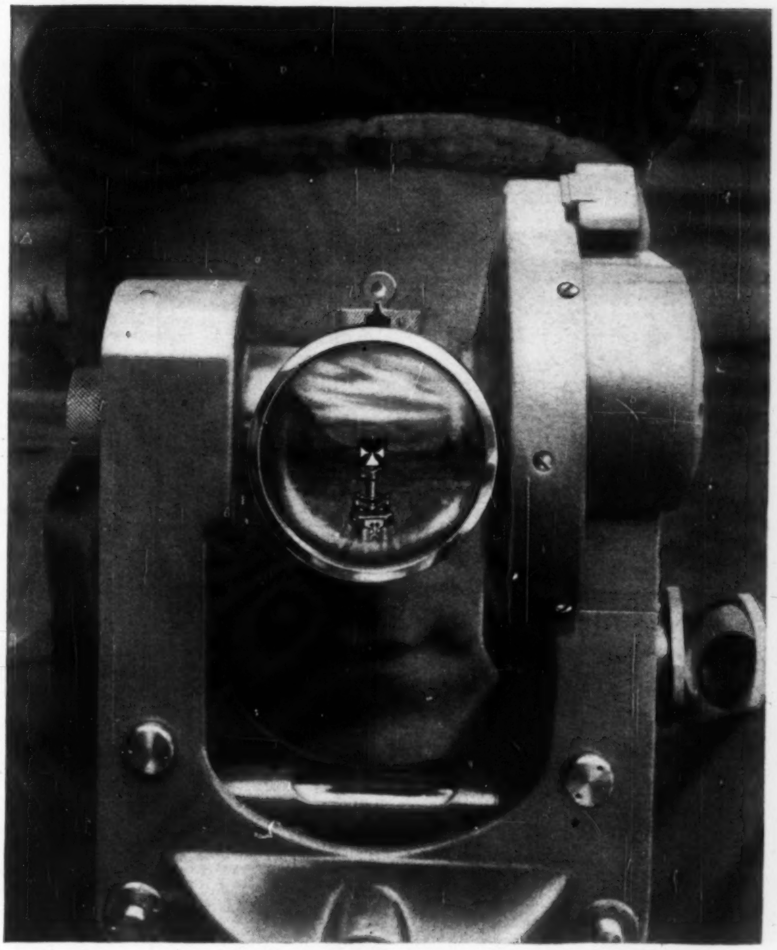
SIR—The public works sector of our foreign aid program could be administered more efficiently and our free and democratic way of life demonstrated more effectively if a private non-profit public service organization were created to perform the role of a foreign aid public works architect.

There is established precedent for this type of thinking. Our U. S. Air Force space and ballistic missile program is utilizing similar entities as exemplified by the Rand organization, the Aerospace Corp.

This non-profit public service coporation would provide the scientific and technical leadership required to plan, finance, construct, and maintain public works. Some of the basic policies of this foreign aid public works program would be the use of construction equipment manufactured in the U. S., and further that the actual construction be performed as a joint effort whereby a U. S. contractor would joint venture the construction with a contractor of the country involved. This is private enterprise in action. Also, employment for U. S. job holders acting as supervisory personnel and as employees of equipment manufacturing concerns would result.

From personal knowledge I am confident that such a non-profit public service corporation could be staffed with high-caliber personnel available in the heavy engineering construction industry. I have for the last half of my 22 years in the practice of law, specialized in representing heavy engineering contractors engaged in constructing public works throughout the world.

LEON J. GARRIE
Los Angeles, Calif.



A FAVORITE FOR CONSTRUCTION, MINING AND MILITARY surveys. The reading system, fully illuminated, features a scale microscope direct to 1' and better than 20" by estimation. Repetitions are made with a circle clamp, eliminating upper and lower motions. Simple operation and reading, ruggedness, and highest Wild precision in optics and mechanics combine to make the T-16 your best choice in this type instrument...by far!

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OPTICAL TRANSIT
Available with erecting image telescope Model T-16E

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CONTROL WATER...and YOU CONTROL COSTS

Contractor: Henkels & McCoy, Inc., Elkhart, Indiana   Owner: The Ohio Bell Telephone Co.

A telephone conduit, concrete encased, will travel in safety across the Greater Miami River in Dayton, Ohio, when this project is finished.

Working 15 feet below pool of river, in coarse sand and gravel, the contractor controls a heavy flow of water with 2″ MOREFLOW WELLPOINTS, specially designed for jobs of this type where soil and head conditions demand a high yield per wellpoint.

Call on Moretrench engineers to plan a pumping system that's *right* for your job. Make sure your costs stay under control by working with Moretrench—in the dry.

Like to know more about the different types of Moretrench Wellpoints? Ask for Bulletin #1005.

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Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Semiannual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in the Applied Science & Technology Index, Business Periodicals Index and the Engineering Index*

THE CONSTRUCTION WEEK

IN SEARCH OF SHELTER—Seventy shelter-survey contracts amounting to about $1.3 million were sent out to architect-engineer offices throughout the country last week. Within the next couple of months, the total will rise to at least 500, Defense Department spokesmen report.

THE NEW LEISURE CLASS?—A union bid for a shorter workweek threatens to tie up New York City's billion-dollar construction industry. Pushing a demand for a 20-hour week with no loss in pay, electrical workers' Local 3 has voted to strike January 1. Employers sense a gimmick for excessive overtime pay, call the demand absurd and impossible to meet. Union members now get $208.10 a week in straight-time pay, overtime and fringe benefits.

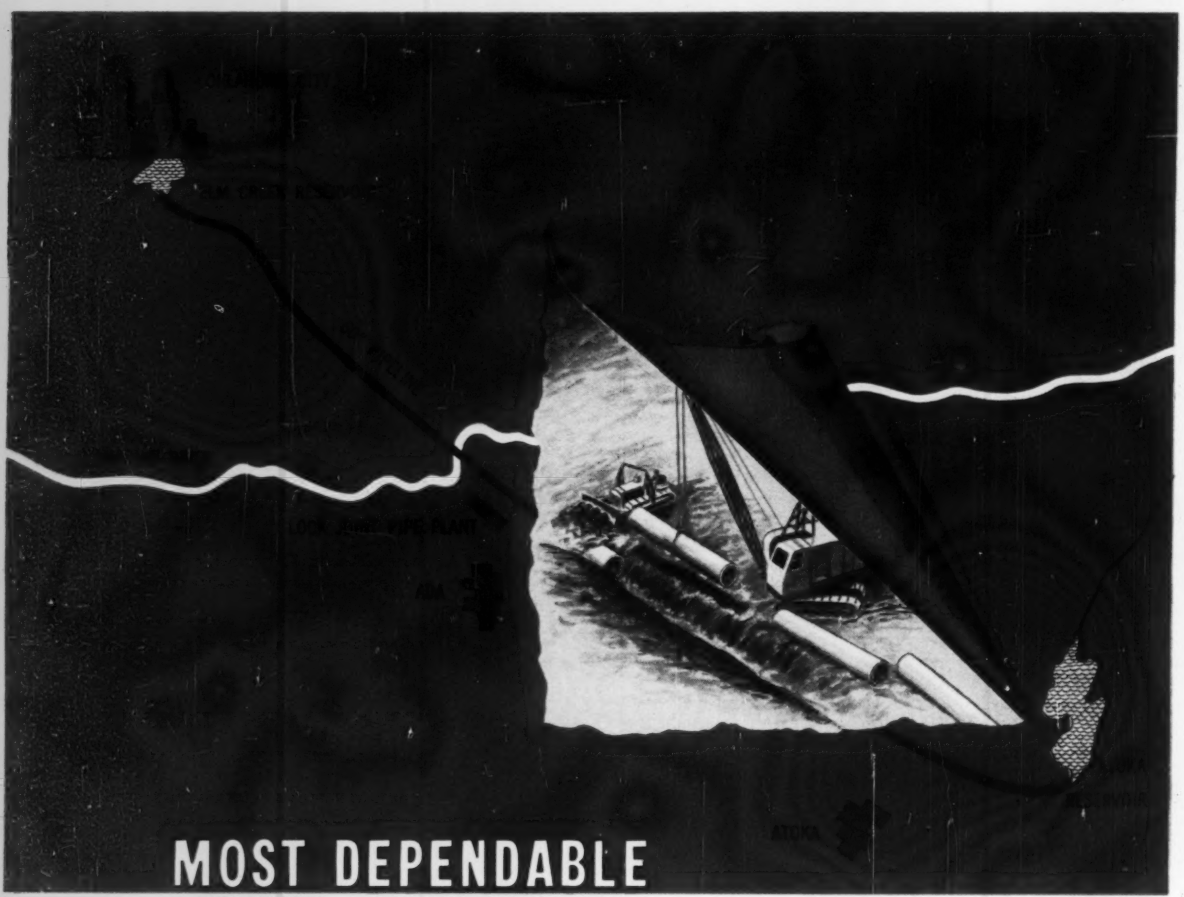
BOSS AND HOME WANTED—The brand-new Delaware River Basin Commission has scouts on the prowl for an executive director (salary open) and a headquarters location. The agency—formed to develop the basin's water resources under a compact of Pennsylvania, New Jersey, New York, Delaware and the U. S. government—met for the first time last week. It named a task group to conduct the search and elected Pennsylvania Gov. David Lawrence chairman to serve for a one-year period.

A FAR EASTERN SUEZ?—Representatives of U. S., French and Thai companies next month will discuss plans for a proposed 30-mile shipping canal across the southern peninsula of Thailand. Such a waterway would link the Indian Ocean and the South China Sea, cut 900 miles off present Europe-Asia shipping routes. Cost estimates for the project range from $300 million to $500 million.

PRESTRESSED CODE—The Prestressed Concrete Institute has published its new Prestressed Concrete Building Code Requirements. The code will be incorporated in the next issue of the American Concrete Institute's code. For copies of the code write to PCI Headquarters, 205 W. Wacker Drive, Chicago 6, Ill. Price $1.00.

Watch for ENR'S Jan. 4 issue

Jan. 4 will be the next issue you receive. There will be no ENR published during the holiday week.
On Jan. 4, ENR will start the new year with a new cover design. We hope you will like it—and that you will enjoy a happy and prosperous New Year.



MOST DEPENDABLE
MOST ECONOMICAL
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When a city must go 100 miles for a sufficient supply of potable water, authorities demand a reliable medium for its transmission to the community. That's why Oklahoma City selected LOCK JOINT PRESTRESSED CONCRETE EMBEDDED CYLINDER PIPE to carry its vital supply of pure water from Atoka Reservoir to the state's capital.

The long life, permanent high carrying capacity and negligible maintenance inherent in Lock Joint Concrete Pressure Pipe make it ideal for the construction of this 60″ aqueduct —the longest continuous water line ever built in the United States.

Economically, Lock Joint Pipe is also ideal. In addition to long term savings effected in low pumping costs and minimum maintenance, the production of the pipe locally at Ada will plow back more than $6,000,000 into the economy of the area through the use of local labor, services and materials.

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CONCRETE PRESSURE, SEWER, CULVERT & SUBAQUEOUS PIPE: PLASTIC PIPE AND PROTECTIVE COATINGS

WASHINGTON OBSERVER

- **Pentagon will expand Minuteman construction**
- **Mayors back a $1.75-billion transit program**
- **Bureau of the Budget may lose its water power**

- **Construction schedules for the Air Force's Minuteman ICBM will be expanded.** This is a direct result of the Pentagon's decision to cancel the program for development and production of a mobile rail car launching platform for the missiles. The Air Force had planned 90 Minuteman missiles on rail cars. This would have cost about $450 million. Officials decided they would rather put the same amount of money into about 150 of the missiles at fixed installations. Chief reason: Fixed-base versions of the Minuteman simplify deployment operations, particularly in terms of guidance.

—

- **Reorganization of the Bureau of Public Roads has led to creation of two major new offices—planning and highway safety.** They were set up to meet a growing demand for systematic planning and broad programming in highway development and to coordinate government and private efforts to alleviate the highway accident problem.

  E. H. Holmes, former BPR Assistant Commissioner of Research, heads the new Planning Office. His old post in the Office of Research has not yet been filled. Neither has the post of director of the new highway Safety Office. Deputy Director is Charles W. Prisk, a career BPR employee and a highway safety expert. The reorganization has caused no significant change in functions of the engineering office, except that it loses its urban planning activities.

—

- **The nation's mayors are pressuring Congress and the Administration for a broad program of federal aid for local mass transit systems.** The American Municipal Association wants a five-year, $1.75-billion program. Major goals: $250 million annually in grants to finance two-thirds of the cost of acquiring right-of-way, parking space near stations and entire bus or rail systems; plus $100 million a year in loans to assist in buying new commuter rail cars and buses.

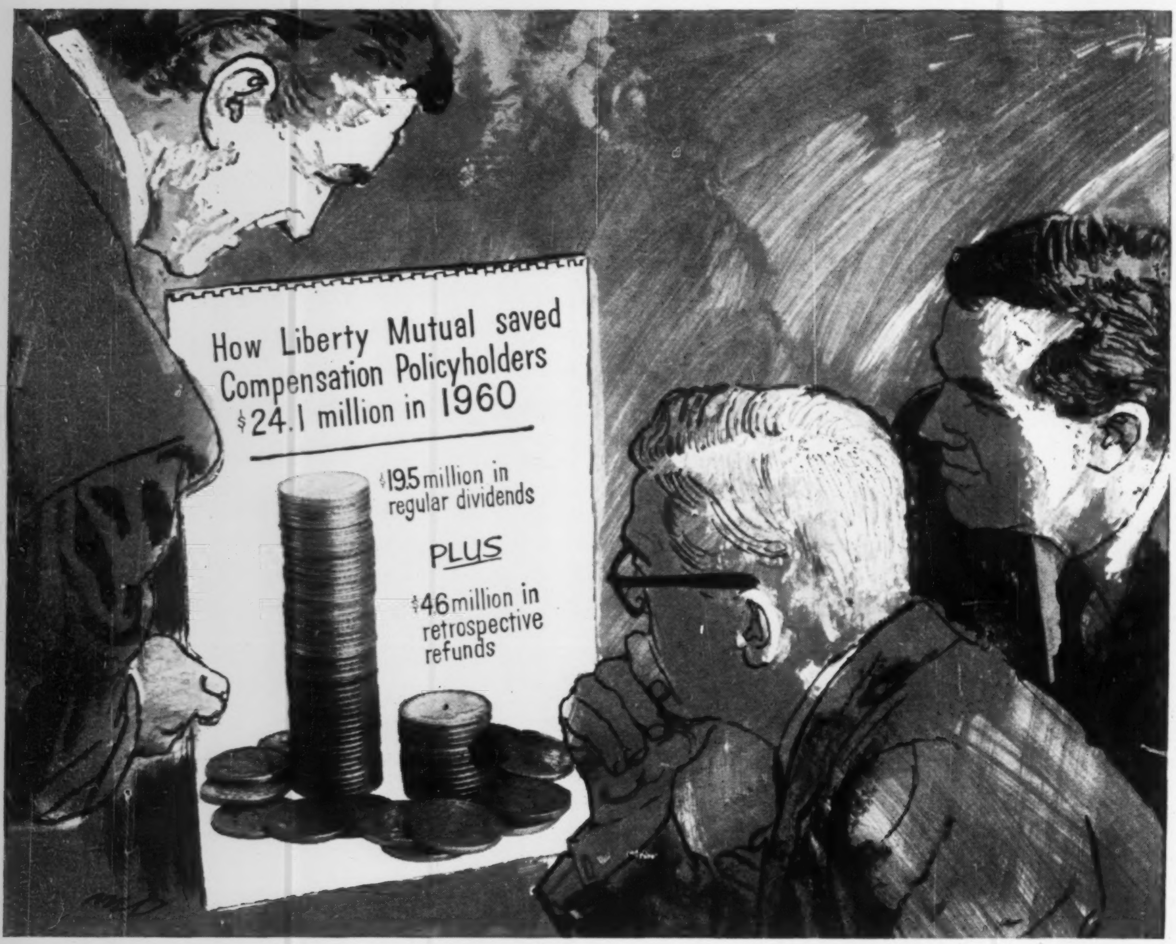
  The Administration favors an aid program, but has not yet decided what form it should take. Sen. Harrison Williams (D., N.J.) is incorporating the AMA proposals into legislation and will push for its enactment regardless of the Administration's position. It has little chance without such support, however.

—

- **The federal Budget Bureau may lose the power to block new starts on river projects.** That is one recommendation in a new set of proposed executive policies, standards and procedures prepared at the President's request by the Secretaries of the Interior, Agriculture, Defense and Health-Education-Welfare. The Bureau for years has, in effect, vetoed projects by refusing to recommend them. Congress has hardly ever authorized a project over an adverse report by the Bureau.

PROTECTION IN DEPTH

How it helps cut compensation costs


How Liberty Mutual saved Compensation Policyholders $24.1 million in 1960
$19.5 million in regular dividends
PLUS
$4.6 million in retrospective refunds

Did you share in these $24,100,000 insurance savings?

You did — if Liberty Mutual handled your workmen's compensation insurance last year.

There are two good reasons why Liberty's compensation policyholders each year save so many millions of dollars. First, it's a matter of record that Liberty Mutual keeps its operating expenses far lower than the average for all other companies in this field. Second, Liberty offers its policyholders the sweeping benefits of protection in depth.

This broad range of services in loss control has helped make Liberty the nation's largest writer of compensation insurance. Last year, it also helped us return $4.6 million under retrospective rating plans and $19.5 million in dividends — $24,100,000 savings to our compensation policyholders. More than that, we helped many policyholders earn experience rating credits which will reduce their future premiums. Liberty Mutual policyholders also enjoy premium discounts allowed under rating plans in the amount of $3.0 million.

If you didn't share in these savings during 1960, just contact your nearest Liberty Mutual office. Find out how Liberty's protection in depth can save you money.

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Personal Insurance: Automobile, Fire, Inland Marine, Burglary, Homeowners • **Business Insurance:** Workmen's Compensation, Liability, Group Accident and Health, Fire, Inland Marine, Fleet, Crime.

CIRCLE 40 ON READER SERVICE CARD

How's Business?

"Business is better than last year; we expect much better next year."

"There is increasing and uninhibited competition from engineer-constructors."

"Good, we are busy on worthwhile projects."

"We are finding it harder and harder to make a satisfactory and reasonable profit."

"We are now looking for overseas work, basically connected with foreign aid programs."

"A regional engineering firm such as ours needs diversity."

"We find field supervision more profitable than in 1958."

"Percentage of highway jobs supervised is lower than we would like it to be."

Consultants Mostly Optimistic

Business has been better for the majority of the major U.S. consulting engineering firms.

But it wasn't bad in '61—better than in '60—and it might be even better in 1962.

Information from 68 of the nation's leading consultants indicates that about half of them expect to expand their staffs next year. Most of the other half hope to hold their own. Only five firms contacted are cutting their engineering staff.

Diversity in type of work and capability to handle work abroad seem the two keys to continued success among consultants. Two out of three firms contacted can claim diversification of services, mostly in the past four years. More than half the firms do work abroad and four-fifths of them are looking for overseas work.

Defense work has been no great boon to these consulting engineers, nor is it expected to be in '62. Only 11 firms in the 68 say it has enlarged their practice, and of these 11, four see it falling off in the year ahead.

Supervision of construction is no more nor less an element of business for these consultants than it was over three years ago when ENR surveyed the situation (Construction Supervision: Consultants Look for More of It, ENR Mar. 6, 1958, p. 25): 45% say they are supervising a greater dollar volume; 30% say less; the rest see no change. But it does seem that at least a few have found how to make their field work a more profitable part of their business. They do it cost-plus.

Size of the professional staffs on each consulting firm contacted is not, of course, the sole, or best, measure of its current business or its prospects for 1962. Neither is any other statistical measure nearly as descriptive of how they see their business today and tomorrow as the actual words of the principals in the firms.

From Chas. T. Main, Inc., Boston firm that is phasing out of its big New York State power projects, but finding new business (to employ 750 engineers) in food processing, to Joseph S. Ward (with 10 engineers on his staff), who says he'll open a Tokyo office in '62, it's what they say about their own business that describes best the general business situation among consultants.

Competition is a word they keep repeating.

"There is increasing and uninhibited competition from engineer-constructors, now actively asking and securing engineering assignments, not tied to ultimate construction, on public works," says Mason Lockwood of Lockwood, Andrews & Newnam, Houston.

"Sanitary consulting opportunities are not as many as before," says a consultant. "We're beating the bushes hard for the first time in several years. Prospects look thin," says another in the same specialty.

"Fewer opportunities result in extreme competition which is often unprofessional," says Malcolm Pirnie, Jr., in New York.

"It appears to us that the matter of pressure to make political contributions by engineers is becoming more and more prevalent," says a prominent Baltimore consultant.

"We are finding it harder and harder to make a satisfactory and reasonable profit due to rising direct and overhead costs of doing business in private practice with our compensation directly related to stabilized or, in some in-

. . . Increased competition has consultants looking overseas,

stances, declining costs of construction," says another.

Guy Kelcey of Edwards & Kelcey in Newark, N. J., says, "There are no bargains in parachutes or engineering. Excellence, quality and adequacy in both are worth the investment. We note a trend in public works to ignore possible consequences of low-cost engineering."

Working overseas is one way consultants have to escape domestic competition.

Gibbs & Hill Inc. of New York finds its domestic work in steam power plants down because of the increase in turnkey contractors (engineer-constructors) competing for a diminishing number of projects. So it will increase its foreign work in '62, work that was already 50% of its total in '61.

Meissner Engineers in Chicago sees the urban parts of the Interstate Highway System, on which it has been busy, petering out by 1965. "As a result," says Donald Walsh, "we are now looking for overseas work, basically connected with foreign aid programs and the Alliance for Progress (with Latin America)."

Meissner at present does but 15% of its business abroad. And it is the exceptional U.S. consulting firm like Tippetts-Abbett-McCarthy-Stratton, in New York, Harza Engineering Co. in Chicago, or Gibbs & Hill, mentioned above, that can boast 40 to 50% of its work is overseas. Only one-third of the firms surveyed had as much as 20% of their dollar volume of work abroad. With the rest it's a smaller amount, which they hopefully wish would grow larger.

"We'll go anywhere jets go," said two different firms among the 80% who are looking for overseas assignments.

Diversification is another way to beat competition.

"A regional engineering firm such as ours needs diversity," says Holly Cornell of Cornell, Howland, Hayes & Merryfield in Corvallis, Ore. "The work load can be maintained at a much more stable level if our practice is not dependent on a single field."

On the other hand, one structural specialist says, "We are in a rut with about the same volume of work the past few years," and he is not necessarily complaining.

Diversification by a firm means it can compete in more markets. But many firms prefer to specialize and depend on their reputation in their specialty for a steady volume of work. Such firms tend to resent the consultant whose diversification brings him into their specialty as a new competitor. But most see diversity as good business for engineering firms.

One of the greatest diversification success stories in consulting today is Ammann & Whitney, New York firm which with 720 engineers had a recent peak of near 850 professionals employed. The Ammann in the firm's name has meant suspension bridges through the years (the great Narrows Bridge today), while the Whitney still in the name has meant large-span concrete structures (unusual ones like the Dulles International Airport terminal now under construction for Washington, D. C.).

Add to that highways, buildings, airports and such exotic structures as the Navy's radio telescope at Sugar Grove, W. Va., and you've got the kind of diversification that really pays.

Supervising construction is still not very good business for consulting.

Recalling ENR's earlier interest in this phase of their business, many offer comments.

"We find field supervision more profitable than in 1958, but that doesn't mean we don't lose money on it. We now lose less. It is still difficult to secure reimbursement for all costs involved," says the spokesman for a Kansas City consultant.

"We insist on supervision on all construction we design, except work done by state highway departments or the Corps of Engineers," says an Illinois consultant, adding, "Most municipal clients favor this arrangement."

"Percentage of highway jobs supervised is lower than we would like it to be," says Maurice Quade of Parsons, Brinkerhoff, Quade & Douglas in New York.

"Next year will probably see less field supervision," says Loren Thompson of Stevens & Thompson in Portland.

Philip King reports that King & Gavaris in New York does a good bit of highway construction supervision,

FIRMS SURVEYED AND NUMBER OF ENGINEERS THEY EMPLOY

750—Chas. T. Main, Inc.
720—Ammann & Whitney
700—Michael Baker, Jr., Inc.
618—Sverdrup & Parcel
550—Giffels & Rossetti, Inc.
500—Howard, Needles, Tammen & Bergendoff
403—Tippetts-Abbett-McCarthy-Stratton
354—Parsons, Brinkerhoff, Quade & Douglas
350—Daniel, Mann, Johnson & Mendenhall
340—Gannett, Fleming, Corddry & Carpenter, Inc.
330—Gibbs & Hill, Inc.
330—Harza Engineering Co.
306—Black & Veatch
300—Metcalf & Eddy
271—Lockwood, Kessler & Bartlett, Inc.
260—DeLeuw Cather & Co.
260—Meissner Engineers, Inc.
210—Frederick R. Harris, Inc.
192—Lockwood, Greene Engineers, Inc.
184—Whitman, Requardt & Associates
175—J. E. Greiner Co.
160—Fay, Spofford & Thorndike, Inc.
155—Edwards & Kelcey
142—Stanley Engineering Co.
140—J. Stephen Watkins Co.
135—Maurice H. Connell & Assoc., Inc.
135—Seelye, Stevenson, Value & Knecht
130—Burns & McDonnell Engineering Co.
120—Bovay Engineers
120—Harland Bartholomew & Associates
120—Porter, Urquhart, McCreary & O'Brien
115—Richardson, Gordon & Associates
110—Forrest & Cotton
110—Henningson, Durham & Richardson
108—J. N. Pease & Co.
105—King & Gavaris
100—Warren & Van Praag, Inc.
95—Dames & Moore
90—Albright & Friel, Inc.
77—Praeger-Kavanagh-Waterbury
74—Severud-Elstad-Krueger
69—Greeley & Hansen
68—Lockwood, Andrews & Newnam
68—Moran, Proctor, Mueser & Rutledge
64—Stevens & Thompson
60—Cornell, Howland, Hayes & Merryfield
60—Hardesty & Hanover
60—Wilson & Co.
55—Abbott, Merkt & Co.
50—John A. Blume & Associates
47—Tudor Engineering Co.
40—Clinton Bogert Engineers
35—Malcolm Pirnie Engineers
35—Alvord, Burdick & Howson
30—Coverdale & Colpitts
28—Harley, Ellington, Cowin & Stirton, Inc.
25—Horner & Shifrin
25—Brandow & Johnston
21—Hazen & Sawyer
19—Westcott & Mapes, Inc.
18—Johannessen & Girand
15—B. M. Dornblatt & Associates, Inc.
15—Spencer J. Buchanan & Associates
12—W. R. Holway & Associates
12—J. Y. Long, Co.
10—Joseph S. Ward and Associates

diversifying

and he gives a new reason for its unprofitability: Increased paper work to comply with Bureau of Public Roads requirements in case of questioning by non-technical investigating personnel (such as Blatnik Committee staffers).

Ford Bartlett, president of Lockwood, Kessler & Bartlett, Inc., points up another unusual difficulty with construction supervision. His 35-man field force was idled when a teamsters strike shut down local construction for two months during 1961. He had to assign them temporarily "where their talents might not have been used efficiently."

Only a few consultants contacted seem to have been able to keep construction supervision on the profitable cost-plus basis. Clinton Bogert Engineers in New York calls cost-plus "the most equitable basis for both the client and ourselves."

Gannett Fleming Corddry & Carpenter in Harrisburg, Pa., has made supervision more profitable by increasing charges. So has the firm of Henningson, Durham & Richardson in Omaha.

All told, then, the nation's top consultants as a group have no great misgivings about 1961. And they are optimistic about '62.

This year found nine of the contacted firms as big as they have ever been—at their all-time peak employment. And next year will see new peaks in engineers employed by still others if their present estimates are accurate.

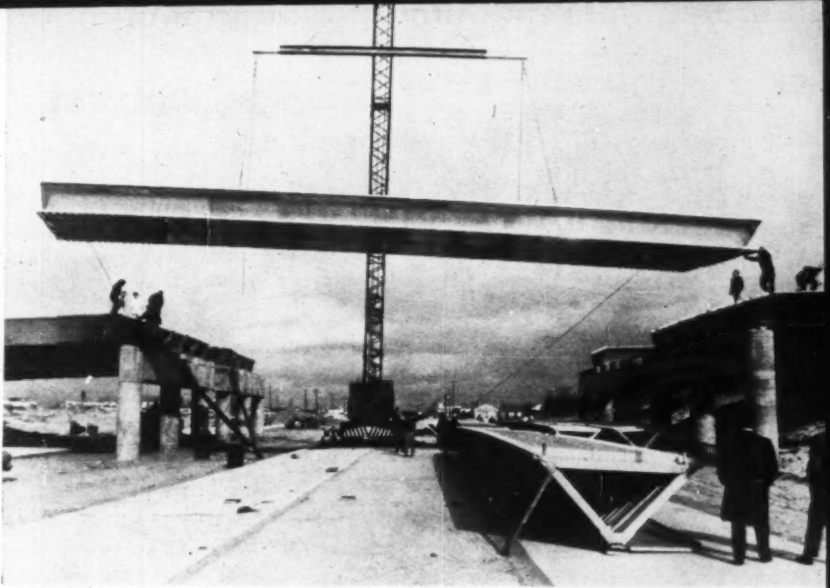
In 1958, ENR found five firms with over 500 engineers; today's list shows six firms of this size.

The day of the thousand-man consulting firm may be fading. In 1958, Michael Baker, Jr., Inc., and Chas. T. Main, Inc., were up there. Previously, others had topped the thousand mark: Giffels & Rosetti in Detroit and Howard, Needles, Tammen & Bergendoff, were two ENR had reported as 1,200-man consulting firms (total payroll) in the mid-Fifties.

The total number of engineers the listed firms now employ is slightly over 10,000. Totaling the numbers employed by these same firms at their peaks gives us over 18,000. By the mid-Sixties there may be still more of a leveling off, if the trend to somewhat smaller firms continues.

Size of firms fluctuates constantly, of course. For the very large ones, it can vary by one or two hundred over a period of a few months.

But to repeat, size is neither the sole nor the best measure of a consultant's business. It's how he says business is that counts. And those asked seem to be saying it could be better—and optimistically hoping it will be.



Aluminum Bridge Goes Into Place

A. J. McNulty & Co. of Maspeth, N. Y., has erected the first of two all-aluminum highway bridges near Amityville, Long Island, N. Y. The bridge uses principles of airplane wing design, and is the second of its general type to be erected in the U. S. The first was a 97-ft span over the Appomattox River in Virginia (ENR June 8, p. 30).

The semi-monocoque structure has four spans, is 212 ft long and more than 90 ft wide. The bridge was designed originally under the sponsorship of Fairchild Engine & Airplane Corp. (ENR Jan. 21, 1960, p. 38). Kaiser Aluminum & Chemical Corp., Oakland, Calif, now holds the design rights. Kaiser calls it the "Unistress" bridge.

Traveler Manufacturing Co., a subsidiary of Stanray Corporation, fabricated the triangular beams from aluminum extrusions and aluminum sheet at Frankfort, N. Y. They were trucked to the job site.

A truck crane lifted the beam assemblies into place. Connections are bolted. The bridges are designed for composite action, with shear connectors for concrete roadways that will be cast in place later.

JFK Opens Purse to Volta Dam

Ghana's Volta River project calling for a 765,000-kw hydroelectric dam and a 100,000-ton-capacity aluminum smelter is now moving ahead with official blessing from the U. S. government.

Approval for loans to the small African nation totaling $133 million has been given. The loans have been withheld since July, because of U. S. doubts about Ghana President Kwame Nkrumah's left-leaning neutralism and the stability of his regime.

President Kennedy held back approval of the loans until a few hours before the deadline when the Ghana government could no longer back out on a contract with the Italian consortium, Impreglio, which will build Akosombo Dam.

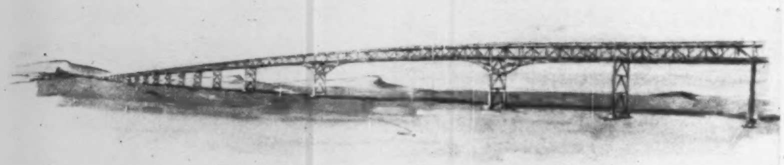
Under the terms of the loans, the money will be made available in stages, so that the U. S. can still back out if the project takes a turn for the worse.

The President hopes the loans will be viewed throughout Africa as proof that Washington does not attach political strings on foreign aid. It is thought that other African countries that have been holding back requests for American assistance for fear of being called "American stooges" will now apply for aid.

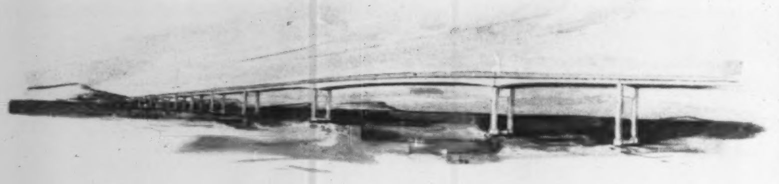
Financing for the dam and aluminum project is tricky. For the dam, the U. S. government is lending the Ghana government $37 million—$10 million coming from the Export-Import Bank for equipment and $27 million from the Agency for International Development. The World Bank is putting up $47 million and the British government is coming in with $14 million. Ghana itself will foot the bill for roughly half the total cost, $98 million.

For the aluminum plant, the Export-Import Bank is lending a consortium of Kaiser Aluminum Co. and Reynolds Aluminum Co. $96 million. The consortium will put up $32 million of its own money.

Akosombo Dam is scheduled to produce power by the end of 1967. The aluminum smelter will be ready to buy power shortly thereafter.



ORIGINAL truss design was criticized as "Rip Van Winkle" creation.



PROPOSED orthotropic plate girder design may be chosen instead.

Bridge Design May Go Orthotropic

The California Toll Bridge Authority probably will adopt a new design for about 2½ miles of the 7-mile San Mateo-Hayward Bridge. That was the conclusion reached in a public hearing conducted by Gov. Edmund G. Brown last week.

The authority originally approved a $65-million, high-level, double-decked steel truss bridge (ENR Sept. 28, p. 21). The design was subjected to heavy newspaper criticism labeling it a "Rip Van Winkle creation."

The new design is for a $70-million, high-level, single-decked steel orthotropic plate girder structure. It will have two 36-ft roadways, three lanes each way, with an 8-ft median. The center span over the navigational channel will have 135-ft vertical and 500-ft horizontal clearance.

The structure will incorporate twin parallel box girders with 12-ft-wide lower flanges. Depth over the piers will be 30 ft, at mid-span 20 ft. An orthotropic plate deck will serve as the upper flange of each girder.

At the public hearing, Vernon J. Richey, supervising bridge engineer of the Division of Bay Toll Crossings, presented five new designs. One of these was in prestressed concrete, the others in steel. All were higher in total project cost than the original design, ranging from $70 million to $91 million. All were for single-deck structures.

Public criticism of the design centered on aesthetics, a subject on which Governor Brown proclaimed himself no authority. Said he, "I claim neither aesthetics nor engineering sense; I have to rely on others."

Consulting engineers in the audience defended the original design, prepared by projects engineer Norman C. Raab and his staff. J. G. Wright of Earl and Wright, San Francisco consulting engineers, said the original design is the most suitable one for the location and the safest for vehicular traffic.

Regarding aesthetics, Mr. Wright said, "Freeways in California are no longer a place from which to enjoy the view."

After protest from the audience, the Authority voted to bring in an outside engineer to act as consultant on the aesthetics of the structure. The result of this study will be given at the meeting of the Authority in January.

Final decision is expected at that time. When reminded of the urgent need for replacement of the present bridge, Governor Brown said, "It won't be delayed any further."

New Specification Issued On Fiberboard Sheathing

The Federal Housing Administration last week approved the Insulation Board Institute's new specifications for ½-in. nail-base fiberboard sheathing.

The new specs offer homebuilders the following advantages:

- All ½-in. nail-base fiberboard sheathing will be clearly marked with the identifying words "nail base," to distinguish it from regular and high-strength fiberboard sheathing.
- Wood and asbestos-cement shingles can be nailed directly to nail-base sheathing, allowing a savings of about $40 per house.
- Applied according to specifications this sheathing does not need corner bracing, allowing savings of $35 per house.
- Powered staple guns, which can cut stapling time in half, can be used to apply the sheathing.

For copies of the IBI specification write to R. A. LaCosse, technical director, Insulation Board Institute, 111 W. Washington St., Chicago 2, Ill.

Tunnel

Tunnel boss Clancy O'Dell took a firmer hold last week on his first job as a contractor principal. San Francisco's Public Utilities Commission decided to award the Canyon Tunnel job to his brand-new Clancy M. O'Dell Construction Co., despite a technicality that threatened for weeks to throw the job open for rebids or disqualify O'Dell's $11.2-million low bid.

On its first try for any job (ENR Nov. 16, p. 19), the O'Dell company has made a dramatic entrance into the ranks of major contractors.

The man responsible is Clancy M. O'Dell, a long-time tunnel worker and tunnel boss who in recent years has been a top project manager on important tunnel work on the East Coast. With him is C. J. Langenfelder & Son, Inc., of Baltimore, a major contractor in other fields—particularly highways and airports.

The delay involved a specification clause limiting the construction plant allowance to 10% of all other items. This was to prevent heavy unbalancing of bids to inflate this early pay item. The O'Dell bid allowed 10.638%. However, this represented a dollar amount smaller than in the second low bid. The smaller base provided by other items in the O'Dell bid made the percentage look high.

In deciding to award to O'Dell, the Commission fell back on a specification clause reserving "the right to waive technical defects in bidding."

The tunnel the new firm now undertakes will run 54,000 ft through solid granite. It will have an unlined horseshoe cross section 14½ ft wide by 14 ft high. Its function will be to develop hydro power now going to waste in San Francisco's water supply catchments in the Sierra, 150 to 200 miles west of the city.

Canyon Tunnel will start at O'Shaughnessy Dam, which impounds Hetch Hetchy Reservoir on the Tuolumne River, and terminate 10 miles downstream on the Tuolumne at a planned 67,500-kw powerhouse. The tailwater will merge with that from nearby existing Cherry Powerhouse on the Cherry River and, with local runoff, feed another nearby existing plant, Early Intake Powerhouse. From there the water enters the 138-mile Hetch Hetchy Aqueduct, which runs across the state to San Francisco.

The O'Dell background is ready-made for jobs like this. Clancy O'Dell was born in Cripple Creek, Colo., 54 years ago and grew up there when it was "the greatest mining town in the world."

Experience as a boy in the mines of

Boss Climbs Upstairs

Cripple Creek led to young O'Dell's first tunneling job, the Moffat Tunnel. It was built in the 1920s to carry transcontinental trains through the Rockies west of Denver. He was called to the job by a Cripple Creek neighbor, George Lewis, general manager of the Moffat Tunnel Commission.

Mr. O'Dell's Colorado tunneling experience led him to the East Coast for the first time in 1929, to work on the Delaware River Aqueduct. This was followed by a stint with one of the most famous old-time tunneling contractors, Patrick McGovern, on New York's City Water Tunnel No. 2, which still ranks as one of the biggest single tunneling contracts in history.

The depression of the 1930s sent Clancy west again where he worked underground at Hoover Dam and then on several of the Colorado River Aqueduct tunnels. All of his experience up to this time had been as a miner, a shifter, a walking boss and in similar capacities.

Most recently, Clancy O'Dell has been project manager for a joint venture of Perini Corp., Walsh Construction Co. and Morrison-Knudsen on the new eight-mile, 17½-ft Wachusett Reservoir Tunnel in Massachusetts for Boston's water supply. His biggest job was as project manager on four tunneling contracts totaling close to $80 million for New York City's West Delaware Tunnel in the Catskill Mountains.

On this work Mr. O'Dell and his organization for the first time took advantage on a large scale of the burnhole technique using two 5-in. relief holes in addition to regular drill holes to facilitate breakage and increase the length of rounds pulled. He says progress on this job was 50% greater than on a nearby tunnel completed by conventional methods as the West Delaware work started.

Mr. O'Dell is not afraid to start in on the contracting business as a principal on a large scale. He says, "I wouldn't know how to run a small job. I've never been on a small job."

He personally handles his own estimating with only minor help from associates. He says there is hardly a place in this country where a tunnel has not been driven. So when a job comes up, he leans on the experience of people who have worked in the area. If nothing better is available, he spends hours and days in the nearest city library looking up records in books and magazine articles to check progress and conditions on previous tunnel jobs. He adjusts this earlier experience of others for the difference and improvement in construction equipment and comes up with an average daily progress. This is the basis of his bidding.

CLANCY O'DELL: Never on a small job.

There are only three officers of the Clancy M. O'Dell Construction Co.: Mr. O'Dell, president; and William P. Rus and William Ruth, vice presidents.

Mr. Rus was formerly with Utah Construction & Mining Co. He now operates his own heavy construction business out of Palo Alto, Calif. He will serve as chief engineer on Canyon Tunnel. Mr. Ruth, of the Langenfelder organization, serves as both vice president and secretary.

The new company plans to bid on other tunnel contracts in the East, and Mr. O'Dell is saving some of the other members of his team to run those jobs. But wherever Clancy M. O'Dell as chief estimator lands a job, he himself will serve as project manager and report to himself as president of the company.

Pentagon Plans $500-Billion Shelter Aid

For the first time since the federal civil defense program was set up more than 10 years ago, Washington is planning to spend federal funds for large-scale construction of fallout shelters.

The outlook is for allocation of from $400 million to $500 million in federal funds during fiscal year 1963, starting next July 1.

As Defense Department plans now shape up, the funds will be allocated as incentive payments to cover roughly 60% of the cost to build community-type fallout shelters in schools, hospitals, and other so-called public welfare institutions.

The goal is construction of fallout shelters to protect some 20 million persons. The plan still depends, of course, on receiving the approval of Congress.

Deputy Defense Secretary Roswell L. Gilpatric disclosed the plan for a Federal Shelter Incentive Program last week. He said the new program would be included in the proposed civil defense budget that goes to Congress next month.

The total CD budget will request about $700 million for fiscal year 1963, more than three times the sum appropriated for civil defense to the Defense Department this year. The remaining funds will be earmarked for warning, radiological monitoring, training, and other CD functions.

The proposed program announced by Mr. Gilpatric, to subsidize construction of shelters for the general population, represents a major turnabout in federal CD policy

To qualify for the incentive subsidies, each shelter will have to accommodate at least 50 persons—on a racially nonsegregated basis—and would have to be open for public use in time of emergency under local CD direction. The Pentagon's formula calls for 10 sq ft of space per individual. Officials estimate construction costs at $40 for each shelter space.

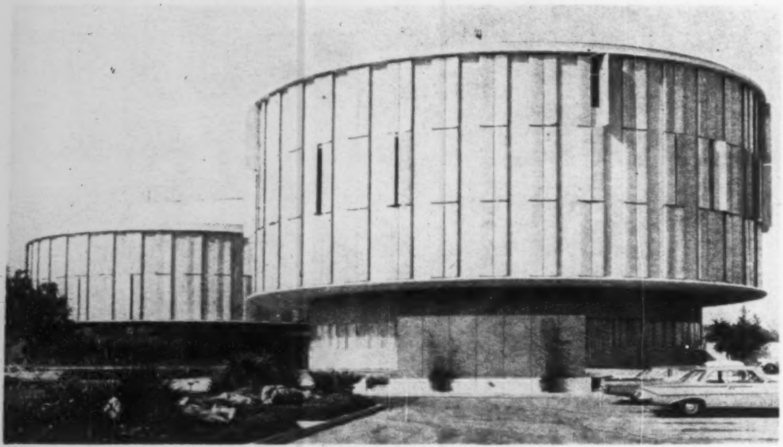
Full details on the new program have yet to be spelled out. But the intent is to limit the construction subsidies to non-profit type projects. Such projects as underground parking lots, exhibition halls, and the like will not be eligible for federal subsidy payments.

The Pentagon will encourage the design of the community fallout shelter facilities to incorporate dual-purpose features. For schools and hospitals, this means the shelters would be normally used for storage, athletic, and related purposes. The proposed program would be retroactive; projects begun on or after Jan. 1, 1962, would qualify for the federal incentive payments.

Highest priority will be offered for schools and hospitals, because of their proximity to the general population. School boards and other non-profit public welfare institutions seeking federal construction subsidies should apply through local civil defense agencies.

The new program offers no incentives for construction of individual family fallout shelters, or for shelter improvements in commercial or industrial structures.

The Pentagon plans to distribute updated plans for low-cost basement or backyard home shelters in the very near future.



Louvers shade windows of circular hospital.

Hospital Adds Round Unit

A four-story circular nursing wing has been added to the Valley Presbyterian Hospital at Van Nuys, Calif.

This is the second of seven circular buildings planned for the hospital. The first 63-bed circular unit has been in operation for three years.

Cast-in-place concrete beams and slabs frame the new 52-ft-high structure. Floor-to-ceiling windows enclose the patients' rooms on the upper three floors. At ground level the building is 38 ft in dia. and at first floor it widens to 49 ft.

Two-bed rooms accommodate 120 patients. Each bed is next to a window shaded by outside vertical sun louvers that are controlled by the patient.

Robert Griffin, project architect for the nursing wing, says that the circular plan will save 37% of the walking time that nurses would spend in a conventional hospital of similar size.

Charles Luckman Associates, Los Angeles, Calif., were the architects; King, Benioff & Associates, Sherman Oaks, Calif., the structural engineers. The general contractor was C. L. Peck, Los Angeles, Calif.

Dam-Designer Carlo Semenza Dies

The death of Carlo Semenza, one of the world's famous dam designers, has been reported from his home in Venice.

Dr. Semenza, after his graduation from the University of Padua in 1919 as a civil and hydraulic engineer, entered the employ of the Societa Adriatica di Elettricita, one of Italy's largest power companies. For many years he was manager of SADE's hydraulic construction department and, at his death, general manager of engineering.

Dr. Semenza designed a large number of his country's notable dams. Best known is probably Vaiont, an 860-ft concrete arch, topping all others of this type in the world.

A firm believer in model studies as an adjunct to dam design, Dr. Semenza was vice president of Instituto Sperimentale Modelli e Strutture, the widely known model testing laboratory in Bergamo. He was also a member of the Italian engineering firm Electroconsult in Milan, organized and owned jointly by Fiat, Montecatini and SADE. Worldwide commissions held by Dr. Semenza in this capacity covered the designs of such dams as Kurobe in Japan, Dez in Iran, Santa Rosa and La Soledad in Mexico and Susqueda in Spain.

Italy's Carlo Semenza

Dr. Semenza was one of the principal hosts to the International Congress on Large Dams when it met last summer in Italy.

2-Mile-Long Harbor Pier Nears Bid-Opening Stage

Bids will be opened January 9 on first-phase construction of Pier J at the Port of Long Beach, Calif. This will be the largest municipal harbor pier in the world—12,700 ft long, containing 310 acres and 11 berths. Estimated cost of this initial work—construction of the pier to visible sand grade—is $15 million to $22 million.

It will take 3 million tons of rock and 33 million cu yd of fill to construct the pier, according to Chief Harbor Engineer Robert Hoffmaster. To obtain fill for the project, a large section in the outer harbor will be dredged to 70 ft. The hydraulic fill will be pumped into the pier site by underwater pipelines.

Later, transit sheds, warehouses and other port facilities will be built along the pier's inner section. And a passenger-cargo terminal for the pier is under design.

About 110 acres of the pier will be devoted to restaurants, hotels, motels and similar facilities. Total cost of the pier when it's opened in 1966 will be an estimated $81 million for the Long Beach Harbor Department and $14 million by private interests.

The pier is part of a 20-year expansion program that began in 1960 and is expected to cost $150 million. The program involves construction of five piers in a new southeast basin. This will double the port's berthing capacity from 35 to 70. Two of the new piers, F and G, already have been completed.

A $2.5-million bulk grain terminal and a $1.3-million super-tanker terminal opened earlier this year.

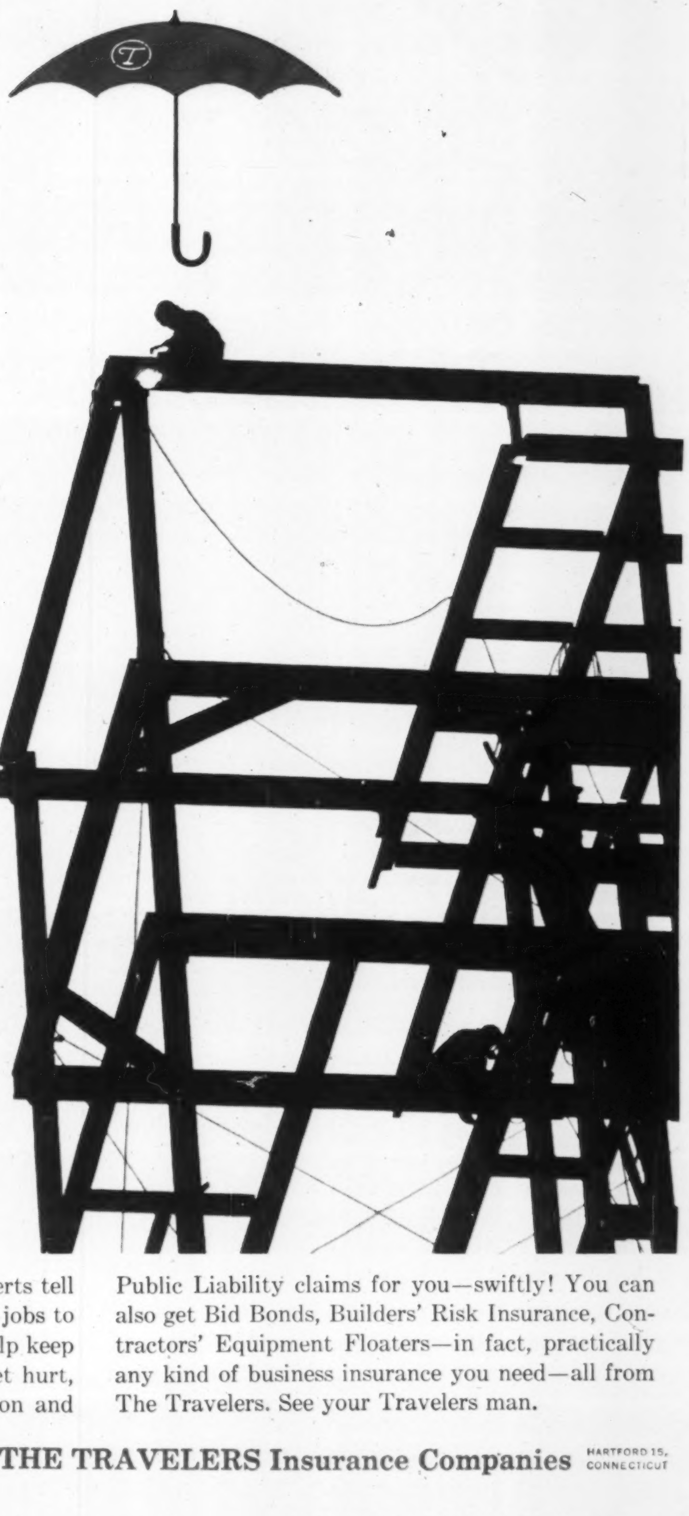
Los Angeles Flatly Rejects Monorail Transit Proposal

The Los Angeles Metropolitan Transit Authority has rejected flatly a proposal by the Wegematic Corp. to finance and build a 14-mile, $63-million monorail rapid transit system (ENR Dec. 7, p. 23).

Basic reason for rejection of the proposal, say MTA officials, is that it calls for an elevated line down Wilshire Blvd., instead of the subway included in the previously adopted "backbone plan" (ENR Aug. 10, p. 22).

Said MTA spokesmen, "The present law does not permit the MTA to build overhead structures without the approval of the local jurisdictions involved, and it has been made abundantly clear that such approval would not be forthcoming for overhead structures along the Wilshire Corridor."

One councilman said, "The people don't want an overhead railway system, which would impair the boulevard's development.



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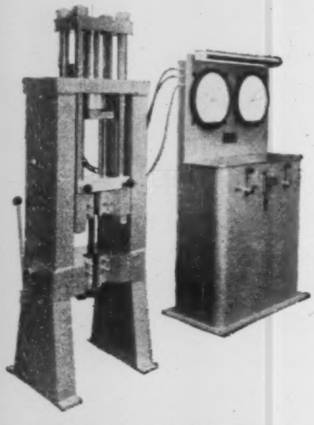

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Around the World . . .

• **Canal program**—Bids will be opened February 1 for a $106.3-million modernization program of the Chesapeake and Delaware Canal, which provides a 14-mile shortcut between Baltimore and Philadelphia. The six-year project, supervised by the Army Corps of Engineers, calls for deepening the canal from 25 ft to 35 ft, and widening it from 250 ft to 450 ft.

• **Tunnel approval**—The Alabama Supreme Court approved construction plans for a second tunnel under the Mobile River. The state is authorized to purchase the existing Bankhead Tunnel, and to lease it and the proposed tunnel to the city of Mobile. Both tunnels will be part of Interstate Highway 10, which leads to downtown Mobile.

• **Western culture**—A $7.5-million building complex comprising the Los Angeles County Museum of Art, will go under construction in early 1962. William L. Periera & Associates, architects of Los Angeles, designed the marble-faced buildings.

• **Israeli port project**—Work is under way on the first phase of a $30-million port development program at Ashdod. The project, a joint venture of an Israeli and two French companies, is owned by Israel's Ministry of Transportation and Communications. Frederic R. Harris, Inc., New York consulting engineers who designed the project, are in charge of supervising construction.

• **First power at Bratsk**—Premier Khrushchev last week officially started the first generator at Bratsk Power Station in Siberia. When completed Russia's Bratsk plant will be the largest single hydroelectric installation in the world with a capacity of 4.5 million kw. The Bratsk Reservoir will impound 145 million acre-ft of water making it one of the world's largest man-made lakes.

• **Interstate grows**—More than 11,250 miles of the 41,000-mile National System of Interstate and Defense Highways are open to traffic, according to the Bureau of Public Roads. Construction is under way on another 4,800 miles, and engineering and right-of-way acquisition is in progress on more than 10,300 miles. About 65% of the total miles are completed or under way, and about 27% of the system is open.

• **Shells at the shore**—The University of California, Berkeley, will be host next fall to the World Conference on Shell Structures. Feb. 1, 1962 is the deadline for submitting titles and abstracts of papers to be presented at the conference. Write to Prof. A. C. Scordelis, Division of Structural Engineering and Structural Mechanics, University of California, Berkeley 4, Calif.

• **Licensed laminators** — Structural glued-laminated timber meeting American Institute of Timber Construction quality standards will, in future, be identified with AITC's quality mark. Only laminators licensed by the AITC may use the mark and its accompanying certificate of conformity.

• **Professional donor**—L. B. Ryon, professor emeritus of civil engineering at Rice University in Houston, has donated $750,000 to finance construction at Rice of a $1-million civil engineering laboratory building. It will be named in his honor. Professor Ryon started teaching at Rice 45 years ago, retired in 1958.

• **Port plans**—A port is planned on a 100-acre site in Sackets Harbor on the St. Lawrence Seaway, by the American and St. Lawrence Seaway Land Co., Inc. The site, on the Black River Bay section of Lake Ontario, eight miles from Watertown, N.Y., has a deep-water frontage of 3,700 ft. Construction is scheduled to begin after the public offering of 100,000 shares of common stock.

• **Newark's airport**—The Port of New York Authority plans to redevelop and enlarge Newark Airport. The two existing 7,000-ft runways will be extended by 1,000 ft, and a new 8,000-ft runway will be built. These additions will increase the operating capacity of the airport by 50%. Plans also call for building a new passenger terminal and for converting the existing one into a hangar.

• **Safety pays**—Since the adoption of a 10-point safety program in 1959, there is a reduction of nearly 20% in on-the-job highway construction accidents in Michigan. The roadbuilders and the Michigan State Highway Department worked out safety specifications. A project engineer has the authority to stop work if these are not obeyed.

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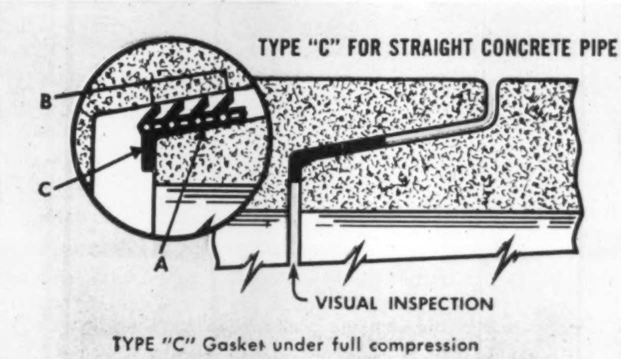
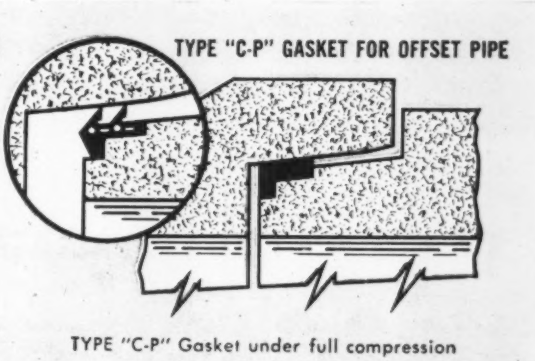


TYPE "C" Gasket under full compression



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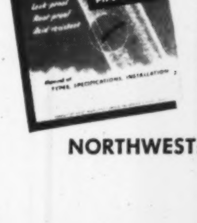

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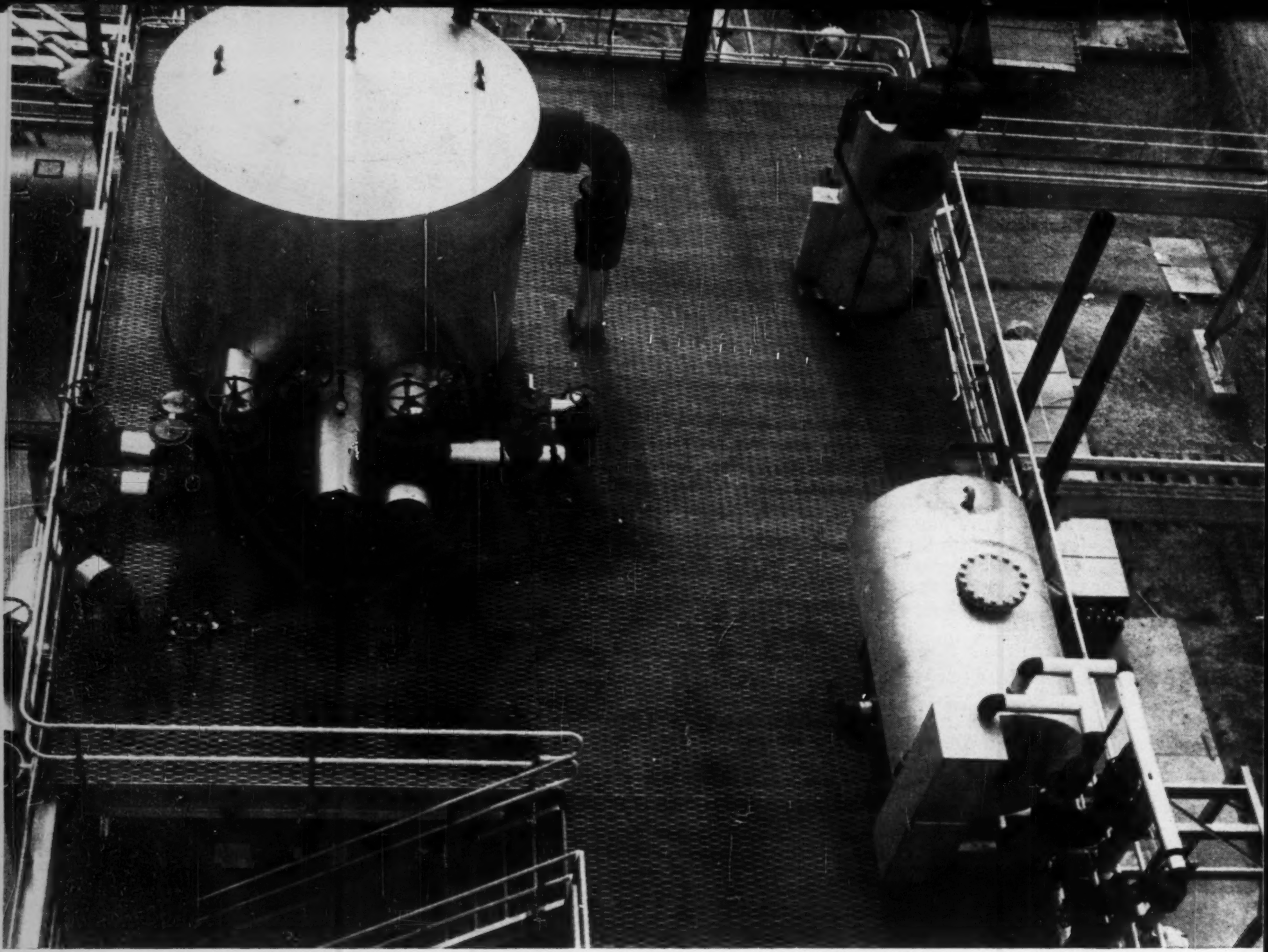

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ENR COSTS REPORT AND OUTLOOK

MATERIAL & EQUIPMENT
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QUARTER

Materials Costs: Roundup and Forecast

Construction costs showed little change during 1961 but all signs point to a reawakening of a strong upward trend next year. Contractors can expect to pay more for all of the basic materials as well as for labor. This fourth quarterly report provides basic facts and figures on men, money, materials—heavy and building construction—highways, and other cost areas.

The report features materials—trends and outlook. You'll find a picture of what contractors paid for materials in the past, a roundup of the most current prices, and a look at what those same materials will probably cost in the next year.

The picture for 1962 is not a bright one. Wage hikes seem to be as sure as death and taxes and almost as tough on the contractor. Some wage contracts already in force provide for automatic increases next year, and you can bet that any new contracts that go to the bargaining table in '62 will be influenced by the record increases labor pulled out of the auto industry.

Wages have already helped trigger boosts in cement and there is a strong possibility that they will be behind a steel increase. Steel and labor are already drawing up battle plans and there seems little chance that the Administration will succeed in its attempts to talk both sides into remaining at the status quo.

If steel does increase it will mean higher equipment prices. Equipment manufacturers are also feeling the squeeze of higher labor costs, and it's doubtful that they can hold the line in the face of costlier steel.

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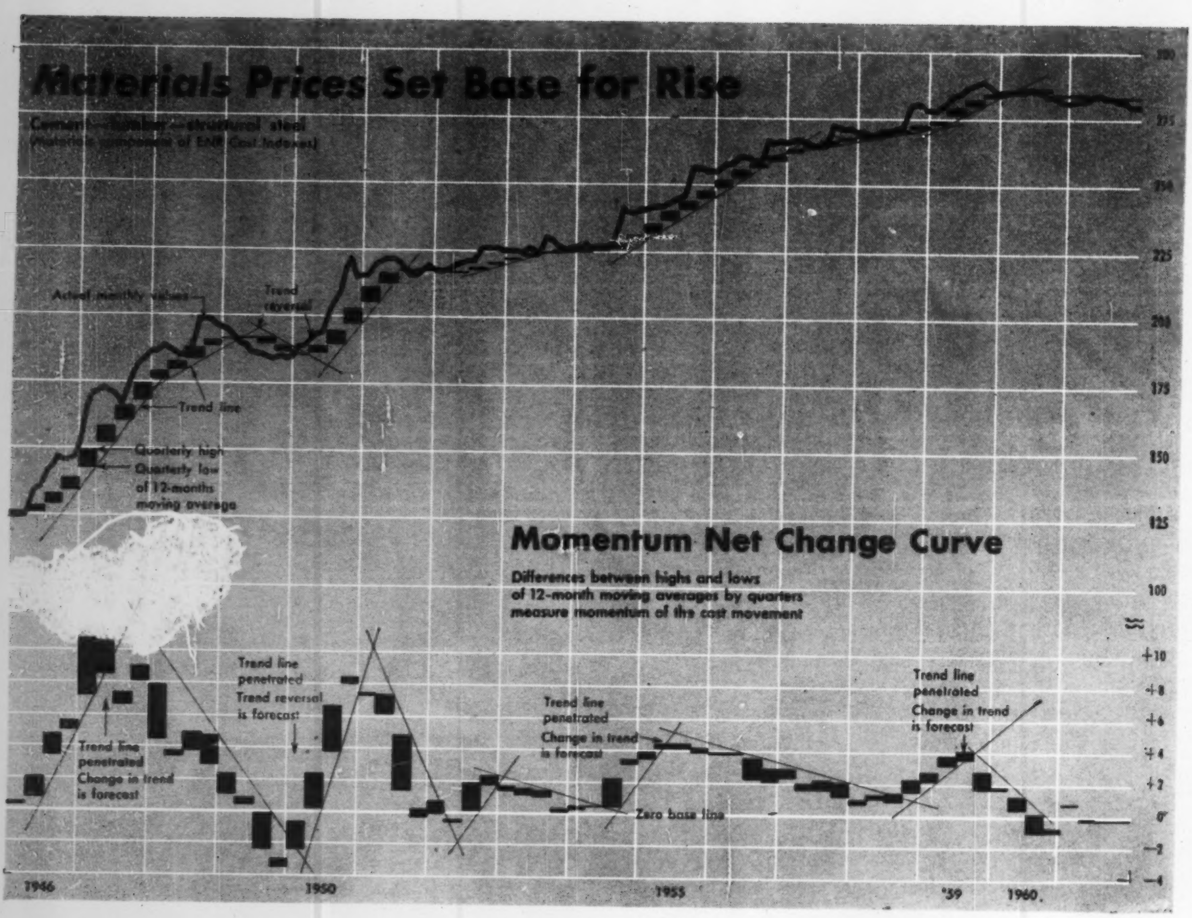


The Outlook for 1962 —

The price trend of construction materials was still on the downgrade in 1961 but shows definite signs of bottoming out. The decline followed 1960's price dip, the first downturn in materials prices since the 1949 slump as measured by the materials cost component of ENGINEERING NEWS-RECORD's Cost Index—the big three, structural steel, portland cement and lumber.

The gentle decline throughout 1961 was due entirely to weak lumber prices, which rode a downward trend all year. Both steel and cement held the price line.

Based on the "momentum net change" blocks for the third and fourth quarters of 1960 (see lower panel of above chart) prices are primed for an increase in 1962. No change appeared in the last quarter. They evened out to a straight line, setting a good base for an upward thrust next year.

Materials prices will have more impact on higher construction costs in 1962 than they had this year, but still not as much as labor will have. ENR sees a 3.6% rise in its 20-cities Construction Cost Index to a record 886.15 by December, 1962. And for the 20-cities Building Cost Index a 3.1% rise to an all time high of 588.14. In 1961 ENR's Construction Cost Index (thanks to the postponed steel price increase) moved up only 2.9% above December 1960, and the Building Cost Index went up only 1.6%.

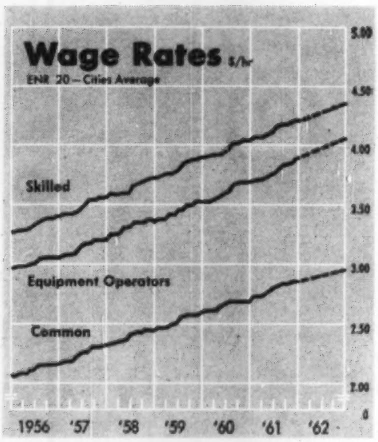
The average increase in labor costs will be smaller in 1962 than in 1961, mainly because fewer contracts are coming up for renegotiation (p. 77).

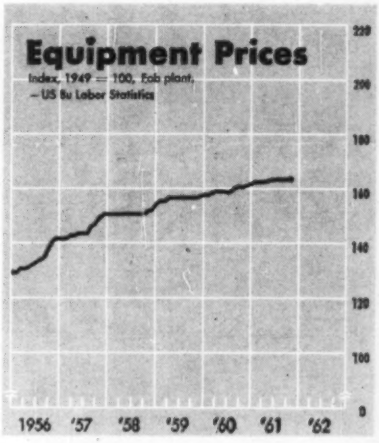
Look for a hike of about 4% in common labor, pushing the average hourly wage up to $2.992. Any new contracts that go to the bargaining table in 1962 are going to be influenced by the healthy rises wrung out of the auto industry this year. Workers obtained more than they did in both 1955 and 1958.

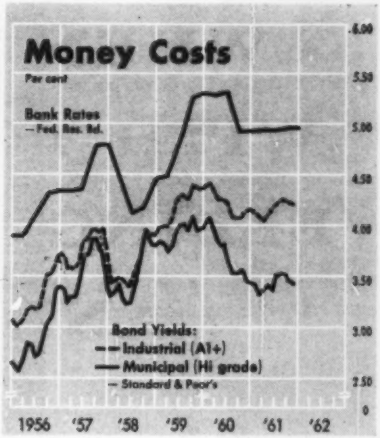
Skilled labor should hit $4.393 by next December, an increase of 3.3% over 1961. This year the average of the three skilled trades (bricklayers, carpenters, and structural ironworkers) went up 3.8%.

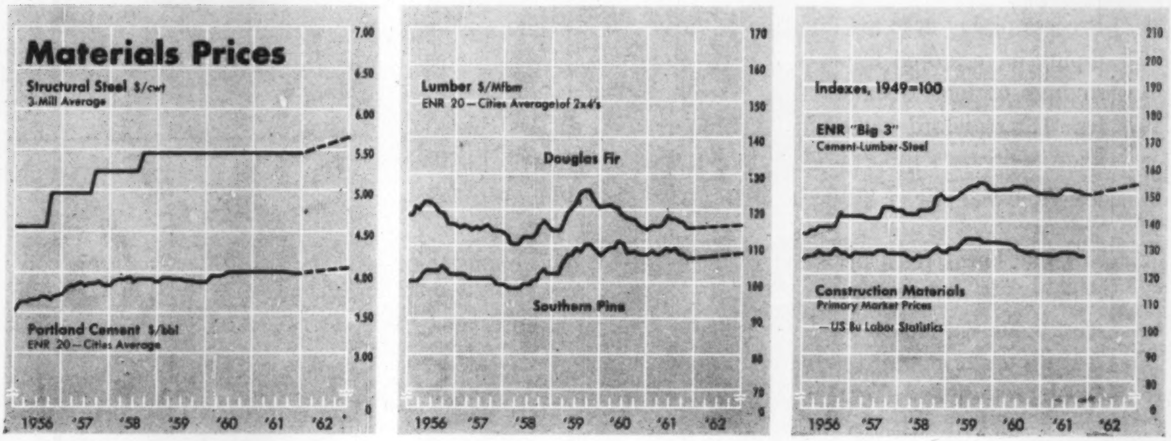
Large cement manufacturers have already announced price boosts as of January, 1962, so be prepared for an average boost of about 1.5% or a total of $4.08 per bbl.

Lehigh Portland Cement Co. has announced a price increase of 10 cents a









Higher Materials and Labor Prices

bbl effective January 1 (but largely cancelled by an added discount of 10 cents a bbl for prompt payment), and Alpha Portland Cement and Ideal Cement Co. are both scheduling 15 cent boosts per bbl for cement delivered after January 1. Rising labor and transportation costs are given as the reasons for these increases.

Of major importance to costs is steel. There is strong possibility that steel prices will go up, but this awaits June labor contract negotiations. If employment costs go up again steel can make a good case for an increase. It's obvious that Mr. Kennedy's appeal to hold the line on steel prices will lose its effectiveness if labor costs continue to rise. After the record increases won by the autoworkers it seems doubtful that steelworkers will hold the line.

If there is a steel price increase, how big will it be? In forecasting its cost index movements ENR has used $4.00 a ton, an increase of 3.6% over the price in force since 1958, which brings the cost of structurals to $5.70 per cwt at the mill.

But the steel pricing problem includes more than labor. Steel meets increasing competition from a variety of other construction materials as well as from imports.

Lumber prices should be a shade higher next year. An increase of 1.5% in ENR's lumber price average (Southern pine and Douglas fir) will boost the average price to $110 per Mbf by next December. The National Lumber Manufacturers Association predicts a 5% increase in lumber shipments next year based on an expected moderate increase in new home starts in 1962. This will mop up some of the overproduction that has plagued the industry and held prices down this year. Lumber consumption is closely tied to homebuilding—better than one out of every three board feet produced goes into the residential construction market.

With increases forecast for construction activity next year in heavy construction as well as in home building, some of the competitive pressure on contractor's bid prices may be eased and they should move up to reflect rising materials and labor costs. But equipment prices are holding the line, at least until the steel price question is answered.

Costs of financing construction promise to increase, but money needed should be available.

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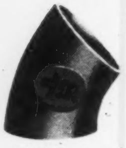
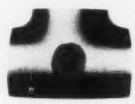
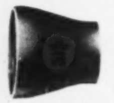


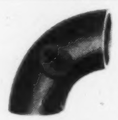
45° Elbow



Straight Tee



Concentric Reducer



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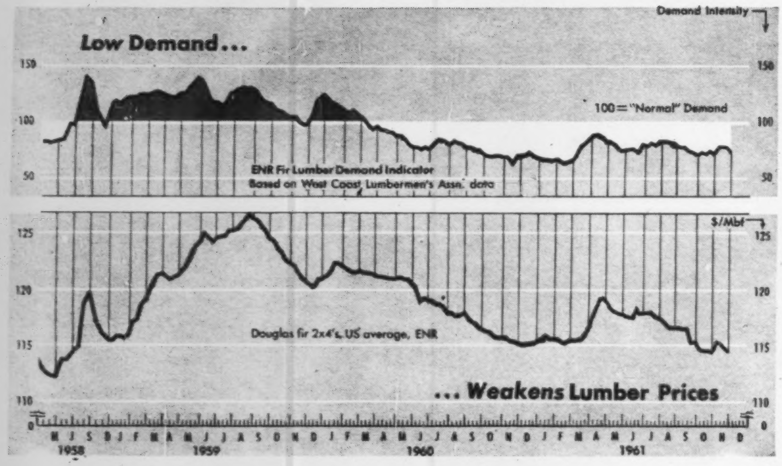

Price Trends for 19 Construction Materials

Prices reported monthly by Engineering News-Record

	November Prices 1957	1958	1959	1960	1961	Per Cent Change 11/60–11/61
Structural steel (average 3 mills), per cwt	$5.275	$5.50	$5.50	$5.50	$5.50	0
Reinforcing bars (average 3 mills), per cwt	5.425	5.675	5.675	5.675	5.675	0
Cement, bulk, per bbl†	3.92	3.95	3.94	4.02	4.02	0
Sand, per ton†	2.487	2.550	2.467	2.362	2.313	−2.1
Crushed stone, 1½", per ton†	2.810	2.849	2.694	2.648	2.415	−8.8
Lumber, 2x4 Fir, per M fbm†	114.60	115.99	122.68	115.90	114.68	−1.1
Lumber, 2x4 Pine, per M fbm†	100.37	102.75	108.96	108.40	106.67	−1.6
Plywood, exterior ⅝", Seattle base price	150.00	170.00	160.00	146.00	150.00	+2.7
Plywood CD grade, ⅝" int., Seattle base price	...	...	94.00	86.55	84-86	−1.8
Gypsum sheathing, ½"x2'x8', per Msf*	63.11	62.88	63.49	62.47	61.65	−1.4
Ready-mixed concrete, per cu yd†	13.70	13.84	14.11	14.34	14.21	−1.0
Fiber board sheathing ½" sq. ed. per Msf*	71.30	71.45	73.51	70.66	71.09	+0.6
Mineral wool insulation 3' batts, per Msf*	71.06	70.46	68.38	67.90	66.52	−2.1
Concrete blocks, sand gravel, 8"x8"x16", each*	0.229	0.229	0.250	2.28	2.26	−0.9
Brick, common, per M†	37.59	37.44	39.62	41.02	41.28	+0.6
Lime, hydrated finishing, per ton, CL†	36.64	36.91	38.71	38.78	39.57	+2.0
Structural clay tile, 3x12x12", per M, 2,000 up*	182.87	179.92	185.95	188.20	193.15	+2.6
Vitrified clay sewer pipe, std 12", per ft†	1.312	1.335	1.367	1.408	1.463	+3.9
Concrete sewer pipe 12", per ft†	1.231	1.264	1.354	1.419	1.426	+0.5

* Delivered, trucklots † Fob City, CL

Construction Materials Prices Over the Years

ENR average yearly prices at New York, except steel & cast iron pipe

Year	Brick common per M	Cement per bbl	Lime per bbl	Lumber per M ft	bm	Steel shapes per cwt *i*	Pipe cast iron per ton *j*
1874	$7.41	$1.48*R*	$1.50*a*	$26*d*	...	...	...
1898	6.65	2.25*R*	.95*a*	22*d*	...	...	...
1907	6.16	1.55*C*	.95*a*	31*d*	...	$1.75	$30.75
1913	6.75	1.18*C*	.915*a*	25*e*	...	1.50	21.00
1929	11.71	2.23*C*	2.25*b*	65*f*	...	1.92	38.00
1932	9.75	1.62*C*	2.25*b*	40*f*	...	1.56	30.50
1938	13.10	2.12*C*	2.80*b*	59*f*	...	2.18	44.00
1939	13.46	2.20*C*	2.80*b*	64*f*	...	2.10	42.75
1942	14.17	2.20*C*	2.80*b*	86*f*	...	2.10	45.00
1947	26.38	3.46*C*	24.34*c*	116*g*	113#	2.61	70.96
1949	33.00	3.32*p*	26.80*c*	98*g*	100#	3.25	86.17
1950	33.50	3.52*p*	27.10*c*	132*g*	133*h*	3.42	84.84
1951	37.92	3.78*p*	31.00*c*	155*g*	141*h*	3.65	96.00
1952	36.45	3.84*p*	32.00*c*	155*g*	141*h*	3.73	97.63
1953	35.33	3.97*p*	32.00*c*	157*g*	139*h*	3.98	102.60
1954	38.92	4.01*p*	32.00*c*	157*g*	144*h*	4.16	104.30
1955	41.00	4.24*p*	33.67*c*	166*g*	167*h*	4.40	106.38
1956	44.00	4.44*p*	36.75*c*	171*g*	174*h*	4.73	115.12
1957	44.00	4.36*p*	37.25*c*	165*g*	165*h*	5.14	121.30
1958	44.00	4.29*p*	39.66*c*	164.29*h*		5.37	125.80
1959	44.67	4.69*p*	39.08*c*	171.33*h*		5.50	125.80
1960	40.69	4.68*p*	38.89*c*	169.00*h*		5.50	125.80
1961*	41.03	4.71*p*	42.36*c*	138.55*h*		5.50	125.80

BRICK: wholesale, fob; **CEMENT**: net, delivered •*R* Rosendale, rest Portland •*C* in cloth bags delivered (1949-$4.23) price of bags included •*p* in paper bags, fob city in carload lots. **LIME**: •*a* common lump, wholesale, fob, 180 lb., net •*b* 280 lb. •*c* common hydrated, delivered, per ton (40 bags of 50 lb. ea) no longer quoted per bbl. **LUMBER**: No. 1 common, rough •*d* 1-in. yellow pine, wholesale at dock •*e* 3-in. LLYP •*f* 3x12LLYP from Lumber Trade Jl. •*g* 3x12 SLYP (LLYP out of market) •*h* 3x12 Douglas fir fob dealers yard, carload lots. # 3x12 Douglas fir fob rail siding, carload lots. **STEEL**: •*i* fob Pittsburgh mill. **CAST IRON PIPE** •*j* Pit cast, 6" & larger, Cl B or heavier B&S, fob Birmingham, Ala. Starting in 1950, figures also represent price index for average price per foot of 6-in. to 24-in. sizes Class 150 Federal Specification WW-P-421 Bell & Plain End Centrifugal Cast Pipe in 18-ft. lengths; beginning 1955, same sizes but for Class 150 Standard Conditions Pipe, Federal Specification WW-P-421a and asa Specifications A21.6 (AWWA C-106) *11 Months average.

. . . Here is how prices moved in '61

Slack housing demand through 1961 kept lumber and other key building materials in a slump. ENR's Lumber Demand Indicator, a barometer of the supply-demand relationship at West Coast lumber mills, trailed slowly downward during most of the year.

Depressed lumber prices were a boon to construction men in 1961, but there is a good chance that the party's over. Residential home building is on the upswing and some of the excess volume of lumber production will be sopped up in 1962, boosting lumber prices out of their doldrums.

Exterior plywood, ⅝ in., was the only wood product reported in the 19 key construction materials that increased in 1961. It moved up to $150, an increase of 2.7% over the November, 1960 price but still is down $10 or 6¼% below its November, 1959 value. Douglas fir 2x4's dropped 1.1% to $114.68 per Mfbm in November, 1961 and pine 2x4's fell 1.6% to $106.67.

Bulk cement remained unchanged in 1961 at $4.02 per bbl, FOB city in carlot quantities. This is an increase of 2.0% over '59. Ready-mixed concrete went down from November, 1960 to 1961, declining 1.0% to $14.21.

During the same period brick, tile, and pipe prices continued on an upward trend. Common brick moved up 0.6% to $41.28 per thousand from November, 1960 to 1961, and structural clay tile (3x12x12 in.) went up 2.6% to $193.15 per thousand. Standard 12-in. vitrified clay sewer pipe headed up a sizeable 3.9% to $1.463 per ft, while 12-in. concrete sewer pipe increased only 0.5% to $1.426 per ft.

Hydrated lime finishing also had a price hike in 1961. It took a 2.0% boost that brought the price up to $39.57 per ton in carlot quantities.

Of the nine items taking price cuts in 1961, the largest drop was in 1½-in crushed stone. It fell 8.8% per ton since November, 1960 to $2.415 in '61.

The three-mill-average structural steel price remained steady at $5.50 per cwt, and reinforcing bars at $5.675. These prices have prevailed since 1958.

Prices in New York City

Materials prices at New York generally follow the trend set in ENR's 20-cities average of materials prices. The exception in 1961 is cement, which increased 0.6%, over the 1960 average in New York City to $4.71 per bbl.

Lumber really nose-dived in New York. Douglas fir 3x12's, at $138.55 per Mbf dropped an average of 18% from their 1960 price average. This was the lowest lumber price since 1953 for this grade.

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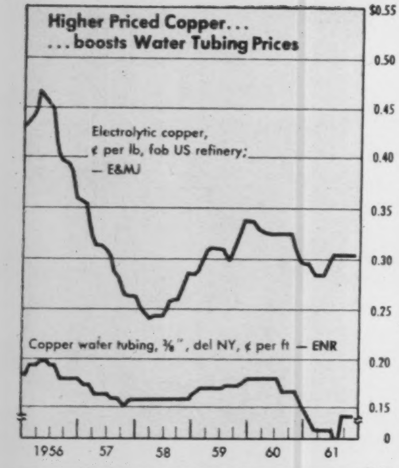
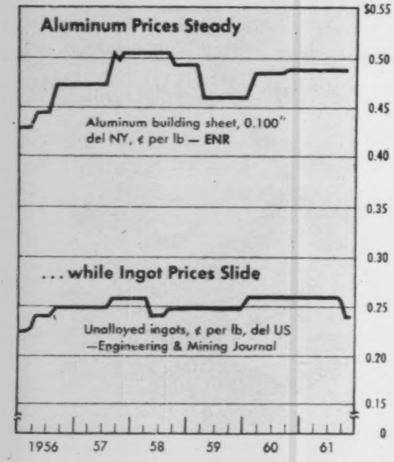


Higher Priced Copper . . .
. . . boosts Water Tubing Prices



Aluminum Prices Steady

. . . while Ingot Prices Slide

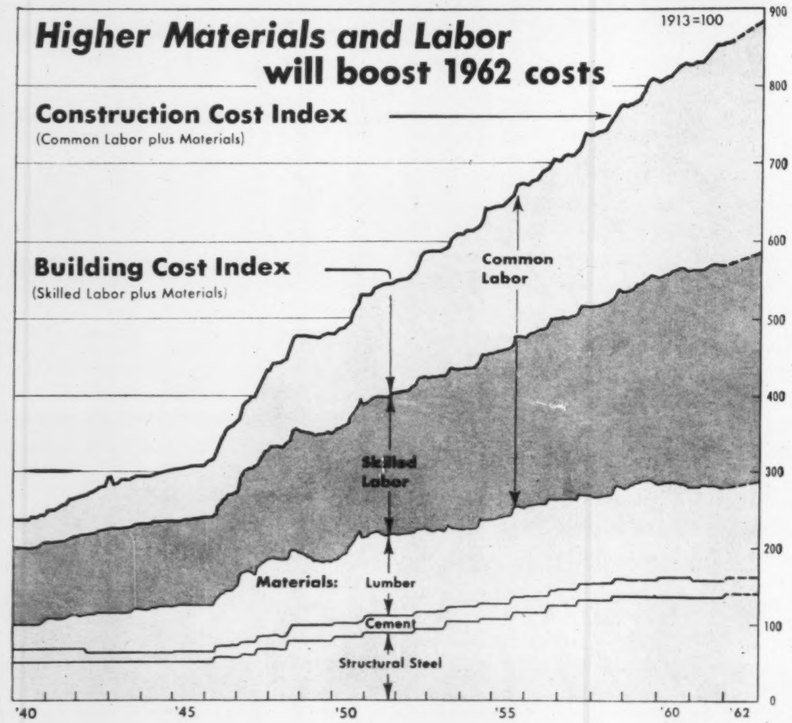
Aluminum Prices Steady As Copper Rises Slightly

Aluminum sheet prices remained steady during 1961 although ingot prices dropped from 26¢ in August to 24¢ in October due to competition from both Canada and Europe. The last decrease in primary aluminum prices was in April, 1958, when the metal dropped from 26¢ to 24¢, reflecting a reduction in Canadian prices.

In addition to Canadian competition, the slackening demand for nonferrous metals abroad creates pressures on the U.S. price. At the same time, the aluminum industry is only using about 80% of its capacity and some hope that the lower price will stimulate greater use of it.

Copper water tubing moves in general with copper prices, but lags two months behind the copper market. Tubing prices started the year at 14.89¢ held at 14.8¢ for five months and closed the year by holding at 14.91¢ for four months.

Copper prices, still under pressure from over-supply, moved up to 30.6¢ in June from 28.6¢ during February through April.



Higher Materials and Labor
will boost 1962 costs

ENR Cost Indexes for 22 Cities, 1913 = 100

Construction Cost Index

City	'49	Dec '58	'59	1960 Sep	1960 Dec	1961 Mar	1961 Jun	1961 Sep	1961 Dec
Atlanta	345	584	623	650	652	653	658	648	648
Baltimore	424	709	745	755	753	754	756	756	747
Birmingham	377	619	652	674	674	674	680	680	700
Boston	532	807	823	833	849	853	867	885	886
Chicago	542	859	918	917	911	905	948	947	946
Cincinnati	496	777	814	844	839	838	845	866	865
Cleveland	530	880	921	943	944	946	976	978	974
Dallas	397	573	604	639	640	640	640	660	660
Denver	470	731	747	756	756	756	779	777	777
Detroit	515	892	942	964	964	964	984	984	983
Kansas City	511	768	798	818	813	813	838	838	830
Los Angeles	494	824	868	908	901	897	942	940	940
Minneapolis	512	824	859	890	885	898	913	913	913
New Orleans	379	617	641	640	649	654	661	670	669
New York	529	940	1008	1038	1036	1058	1059	1078	1072
Philadelphia	515	790	791	830	830	830	848	844	843
Pittsburgh	492	827	849	885	885	885	885	898	917
St. Louis	522	844	874	895	901	901	920	915	933
San Francisco	483	812	850	883	876	878	921	917	910
Seattle	530	799	831	855	853	883	887	887	887
Montreal	394	604	630	650	649	649	642	641	661
Toronto		638	657	692	690	688	691	701	701
U.S. Average	**480**	**774**	**807**	**831**	**831**	**834**	**850**	**854**	**855**

Building Cost Index

City	'49	Dec '58	'59	1960 Sep	1960 Dec	1961 Mar	1961 Jun	1961 Sep	1961 Dec
Atlanta	313	472	499	501	504	504	512	504	504
Baltimore	351	542	558	561	559	560	563	563	555
Birmingham	319	493	515	526	526	527	533	535	541
Boston	372	542	554	567	572	577	588	594	595
Chicago	353	562	581	592	586	580	596	595	594
Cincinnati	362	515	539	549	545	544	552	555	554
Cleveland	349	533	554	561	561	563	574	575	571
Dallas	318	469	490	524	525	527	530	531	530
Denver	359	532	545	551	552	553	554	558	560
Detroit	351	574	595	605	605	605	614	614	614
Kansas City	357	533	553	559	553	553	562	562	551
Los Angeles	340	530	554	569	561	558	570	579	579
Minneapolis	363	553	569	581	576	576	587	587	587
New Orleans	325	494	511	507	508	508	513	517	517
New York	402	609	643	648	645	662	668	670	664
Philadelphia	392	569	578	589	598	590	595	588	588
Pittsburgh	377	595	601	621	626	626	626	630	634
St. Louis	377	563	573	579	576	582	585	581	583
San Francisco	345	533	549	560	553	555	566	571	564
Seattle	341	484	500	506	504	507	515	519	519
Montreal	314	449	459	466	464	564	458	457	464
Toronto		479	488	492	492	490	493	493	498
U.S. Average	**353**	**535**	**553**	**563**	**561**	**563**	**570**	**571**	**570**

Two of the twenty cities covered by ENR's Construction Cost Index had lower construction costs in December '60 than December '61. Atlanta prices managed to decline 0.6% and Baltimore construction costs slipped 0.8%. All of the other cities increased. The largest boost was registered in Pittsburgh where costs were pushed up 3.6% by higher wage rates.

The twenty cities did better cost-wise in building costs. Three cities had lower Building Cost Indexes in December '61 and one city, Atlanta, registered the same index as last December. Baltimore dropped 0.6%, Kansas City 0.2%, and Philadelphia 1.9%.

ENR's Construction Cost Index increased 2.9% over December 1960, and the Building Cost Index went up 1.6%. Watch for costs to move ahead much faster next year when ENR predicts the Construction Cost Index will stand at 886 (an increase of 3.6%) and the Building Cost Index at 588 (a boost of 3.1%). These increases are due mainly to higher labor costs, and some increases in material prices. This forecast includes a strong possibility of a hike in steel prices after steel's new labor contracts are negotiated. If steel prices hold, the Construction Cost Index rise would be 3.1%, the Building Cost Index rise 2.2%.

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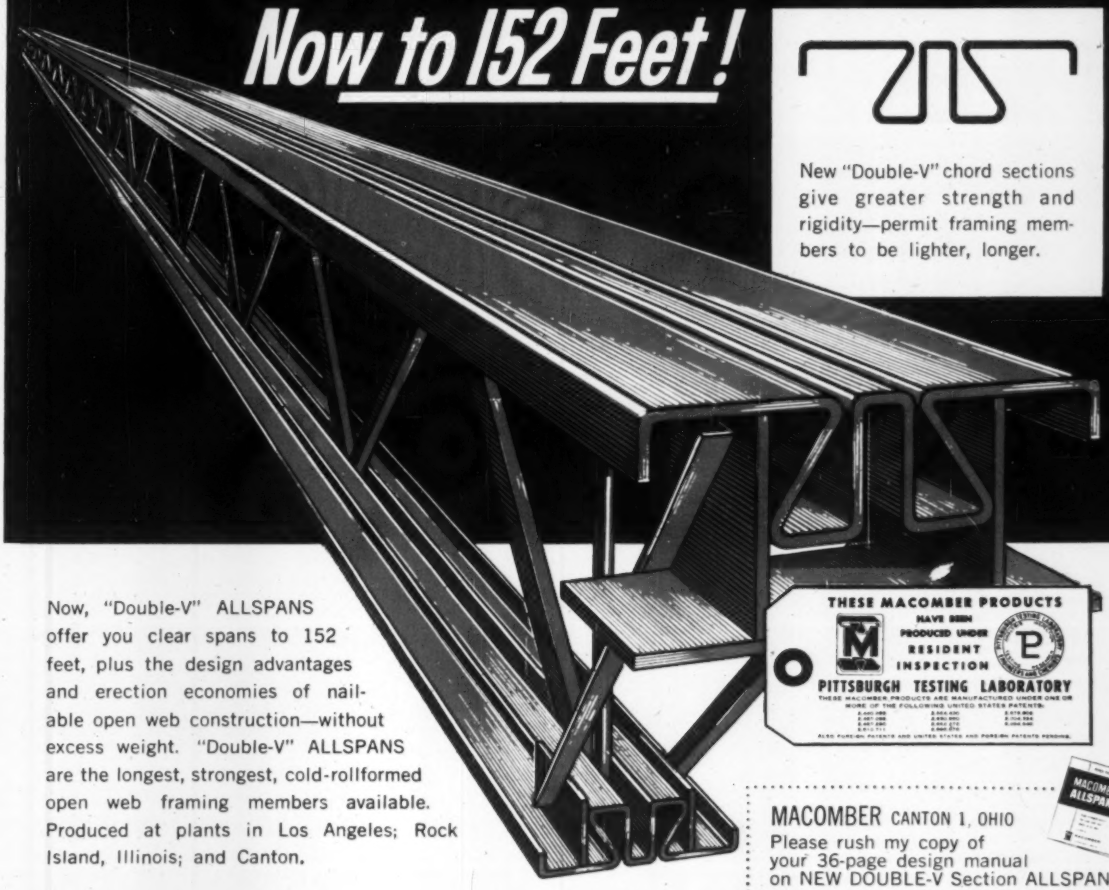
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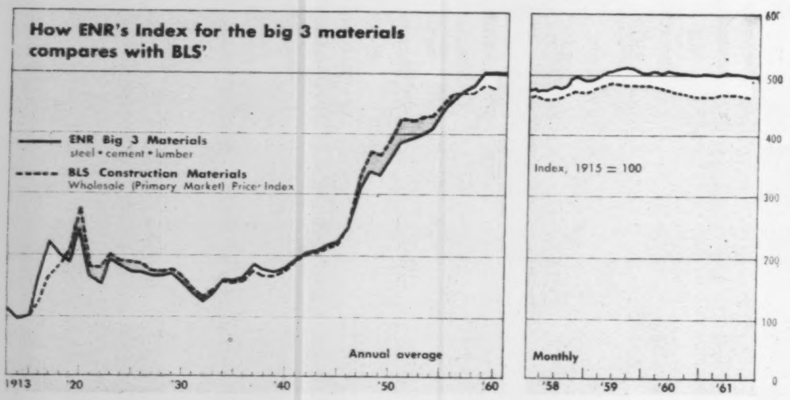
Most Materials Continued to Dip in 1961



The downtrend in construction material prices continued in 1961 but showed signs of levelling off. It nudged the Bureau of Labor Statistics primary market price index for construction materials down to 129.7 in October, a drop of 0.7% since October, 1960 but considerably less than the 3.2% decline between October, 1959 and, 1960.

Declining lumber was the chief item pushing the index down. Lumber and wood products are weighted fairly heavily in the BLS index and six out of the seven areas covered reported drops since last year. The one increase was in Douglas fir, which went up a scant 0.2%. The largest drop was in softwood plywood. It slipped 9.6% from its October, 1960 price.

Sizeable drops were also recorded in fans and blowers, down 6.3%, heating equipment, down 3.8%, concrete reinforcing bars, 3.9% under last October's figure, and plate glass which declined 5.7% for the year following a 5.4% drop between 1959 and 1960.

The biggest increase was in prepared asphalt roofing, which went up 12.9% from October, 1960 to October, 1961, more than recouping the 3.8% drop it experienced during the preceding 12 months.

Wholesale Price Index, Construction Materials

Bureau of Labor Statistics, 1947–49=100

Annual Average			
1915	27.9	1931	41.2
'16	35.2	'32	37.2
'17	46.0	'33	40.1
'18	51.4	'34	44.9
'19	60.2	1935	44.4
1920	78.2	'36	45.1
'21	50.8	'37	49.6
'22	50.7	'39	47.0
'23	56.6	'39	47.1
'24	53.3	1940	49.4
1925	53.0	'41	53.7
'26	52.1	'42	57.4
'27	49.4	'43	58.0
'28	49.0	'44	60.1
'29	49.7	1945	61.3
1930	46.8	'46	69.1

Year	1948	1949	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
Aver	104.0	102.0	119.6	118.2	119.9	120.2	125.5	130.6	130.6	130.5	134.6*	132.6	....
Jan	100.7	105.4	120.2	117.8	118.5	119.6	122.1	129.4	130.5	130.3	132.4	135.2	129.9
Feb	101.2	104.9	120.7	117.9	118.7	119.2	122.5	129.6	130.5	130.1	133.3	134.9	129.7
Mar	101.8	104.4	120.8	118.0	119.2	119.3	122.8	130.5	130.5	129.4	133.6	134.5	130.0
Apr	102.0	103.4	120.9	118.2	119.9	119.0	123.4	131.3	130.7	129.0	134.7	134.3	131.0
May	102.5	102.4	120.7	118.1	120.2	118.6	124.1	130.8	130.7	129.2	135.8	133.9	130.6
Jun	103.1	101.5	120.0	117.8	120.5	118.5	124.1	130.6	130.7	129.5	135.8	132.9	130.6
Jul	104.5	100.3	119.4	118.0	121.3	120.5	125.7	130.6	131.4	129.6	135.3	132.1	130.5
Aug	106.7	99.7	118.9	118.6	120.8	120.8	127.4	131.5	131.3	130.6	135.4	131.4	130.2
Sep	107.0	99.9	118.7	118.7	120.4	121.3	128.5	131.0	130.9	132.0	135.0	131.1	130.0
Oct	106.6	100.2	118.7	118.6	120.0	121.7	128.7	131.0	130.2	132.1	134.9	130.5	129.7
Nov.	106.3	100.6	118.5	118.4	119.5	121.9	128.1	130.8	130.1	132.0	134.6	130.0	.....
Dec.	105.9	101.2	118.0	118.3	119.6	122.0	128.5	130.5	130.1	132.0	134.8	130.3	.....

* Computed by ENR

BLS Construction Materials Price Indexes—1947-49=100

	1947	1948	1951	1952	1953	1954	1955	1956	1957	1958	1959	Oct. 15 1959	Oct. 15 1960	Oct. 15 1961	Percent Change 10/60 10/61	Weight 1958b %
All Construction Materials†	94.0	104.0	119.6	118.2	119.9	120.2	125.5	130.6	130.6	130.5	134.6	134.9	130.6	129.7	−0.7	100.0#
Lumber & Wood Products																
Douglas Fir	95.6	109.1	128.6	127.3	117.2	119.4	130.5	129.9	116.8	114.6	130.7	130.4	111.5	111.7	+0.2	.372
Southern Pine	97.2	106.6	115.7	116.7	115.8	110.7	115.2	119.2	114.6	129.4	116.6	118.6	112.2	110.0	−2.0	.288
Other Softwoods	88.2	106.7	130.0	128.2	132.6	130.4	136.8	137.4	132.8	129.4	137.7	139.6	123.8	120.8	−2.5	.490
Hardwoods	95.5	107.0	122.4	112.5	114.8	112.4	118.4	125.9	119.3	119.2	124.3	124.7	124.1	118.8	−4.3	.343
Millwork	87.3	105.1	130.1	127.0	131.5	130.6	128.7	129.1	128.3	128.2	135.9	138.7	135.5	132.4	−2.3	.697
Plywood, Softwood	88.1	113.5	121.1	110.3	110.7	107.2	110.3	100.8	91.3	91.8	97.9	89.1	88.3	79.9	−9.6	.230
Plywood, Hardwood	101.3	105.8	110.8	101.3	108.4	100.3	102.6	104.7	103.7	104.5	106.2	106.3	108.5	106.1	−2.3	.177
Nonmetallic Minerals																
Portland Cement	91.3	103.0	116.4	116.4	122.2	126.6	131.4	139.7	146.9	150.6	152.2	152.1	155.1	155.2	+0.1	.382
Concrete Ingredients*	93.0	101.8	113.0	113.0	117.4	121.0	124.8	130.6	136.0	139.0	140.3	140.4	142.1	142.5	+0.3	.719
Concrete Products	96.1	100.8	112.3	112.5	115.4	117.5	118.6	123.0	126.4	128.1	129.7	130.3	131.0	131.5	+0.4	.908
Plate Glass	95.2	100.3	121.0	121.0	126.9	132.0	134.7	141.7	145.7	145.2	144.7	145.0	137.3	129.5	−5.7	.057
Window Glass	95.6	100.3	118.0	118.0	125.7	131.3	136.8	142.3	145.8	145.5	145.3	145.3	141.2	141.2	0	.090
Gypsum Products	94.5	103.2	117.4	117.7	121.0	122.1	122.1	127.1	127.1	132.1	133.1	133.1	133.2	137.3	+3.1	.126
Prep. Asph. Roofing	94.1	103.1	104.8	102.9	107.3	104.0	105.1	111.7	122.3	112.8	116.4	110.8	106.6	120.4	+12.9	.136
Struct. Clay Products	93.3	101.4	121.4	122.0	128.1	133.1	140.1	148.0	154.0	156.5	160.2	160.4	162.2	161.9	−0.2	.343
Insulation Materials	97.4	102.6	104.1	105.4	107.9	109.6	106.6	101.5	102.8	103.9	103.1	102.9	105.0	97.5	−7.2	.081
Paint & Paint Materials																
Prepared Paints	98.5	100.3	109.0	110.4	111.1	112.8	114.5	120.0	126.3	128.3	128.3	128.3	128.4	132.2	+3.0	.306
Paint Materials	100.6	102.7	108.8	100.3	96.2	96.3	96.8	99.6	100.5	103.6	101.9	102.6	104.5	100.0	−4.4	.564
Building Paper & Board	93.0	102.8	113.4	115.5	121.4	127.7	130.9	136.9	141.5	143.2	146.4	147.6	145.7	144.8	−0.7	.174
Metals & Metal Products																
Structural Shapes	84.4	102.9	128.4	131.1	138.2	143.8	151.9	162.9	187.5	195.4	199.6	199.6	199.6	199.6	0	.099
Bars, Concrete Reinf.	87.3	100.3	123.3	126.7	141.0	153.7	158.8	169.7	184.1	190.8	195.0	195.0	193.4	186.0	−3.9	...
Pipe, Black Steel	87.2	102.5	122.9	125.8	134.7	141.4	150.7	168.7	185.4	191.5	190.9	190.9	187.0	187.0	0	.046
Pipe, Galvanized	86.9	103.8	124.9	125.1	124.1	128.6	137.1	154.2	163.4	166.4	165.9	166.2	163.9	163.9	0	.021
Cast Iron Soil Pipe	82.4	108.4	119.9	111.7	107.5	106.3	110.6	111.1	115.3	113.1	117.5a	117.5	117.5	.....	.....	.052
Copper Water Tubing	96.9	104.1	121.8	129.3	144.7	138.3	155.5	174.4	151.2	141.8	149.4	149.7	121.5	126.6	+4.2	.167
Sheets, Galvanized	90.5	102.5	132.0	131.8	128.7	131.3	138.8	148.2	152.5	156.6	161.2	161.6	163.4	163.4	0	.241
Sheets, Aluminum	94.7	99.4	118.1	120.6	130.0	134.2	142.2	153.1	162.0	163.4	164.6	164.6	174.2	170.5	−2.2	.274
Metal Doors, Sash, Trim.	96.5	100.7	121.0	117.7	122.6	129.4	139.4	145.6	140.6	141.8	135.2	134.2	131.8	131.6	−0.2	.057
Nails, 8d	81.6	106.4	126.6	130.1	137.0	141.5	151.9	165.3	177.9	182.2	182.2	182.2	174.9	174.9	0	.048
Building Wire	103.3	109.6	116.1	122.4	120.7	93.9	126.6	155.9	132.7	106.1		137.2	109.8	.....	.....	.054
Nonmetal Sheathed Cable	109.4	109.1	107.6	111.2	109.1	110.1	96.5	80.8	84.0	75.9	87.7	91.5	73.9	79.3	+7.3	.054
Hardware, Finished	92.9	101.1	125.8	125.4	132.7	139.3	146.4	155.9	164.9	170.8	173.0	173.1	174.6	176.6	+1.1	.522
Plumbing Equipment	94.7	102.7	122.6	117.4	116.0	118.4	125.4	133.9	130.2	123.7	130.1	131.0	130.7	133.8	+2.4	.193
Heating Equipment	95.3	101.2	114.6	113.8	114.8	114.3	115.0	119.0	122.1	121.2	121.7	121.5	119.3	114.8	−3.8	.308
Basement Oil Tank	99.8	106.8	113.0	113.0	105.8	103.2	111.2	128.1	134.8	134.8	135.4	137.9	121.0	.....	.....	....
Machinery																
Elevators & Escalators	94.5	100.4	113.5	114.1	115.7	117.8	120.8	128.3	138.3	139.3	139.5	140.0	141.9	141.6	−0.3	.066
Fans and Blowers	88.7	97.9	141.7	137.1	138.3	143.7	149.0	166.0	176.3	180.4	182.5	182.2	183.5	182.8	−6.3	.102

† Includes 175 different materials and types of equipment * Includes Portland cement # Percents don't add to 100% because some items included in the index are not shown here
a December 1959 b weights are a 12/60 revision of 1958 prices

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Kingsport, Tenn.
Richard City, Tenn.
Clinchfield, Ga.
Des Moines, Iowa
Petoskey, Mich.

DISTRIBUTING PLANTS

Chicago
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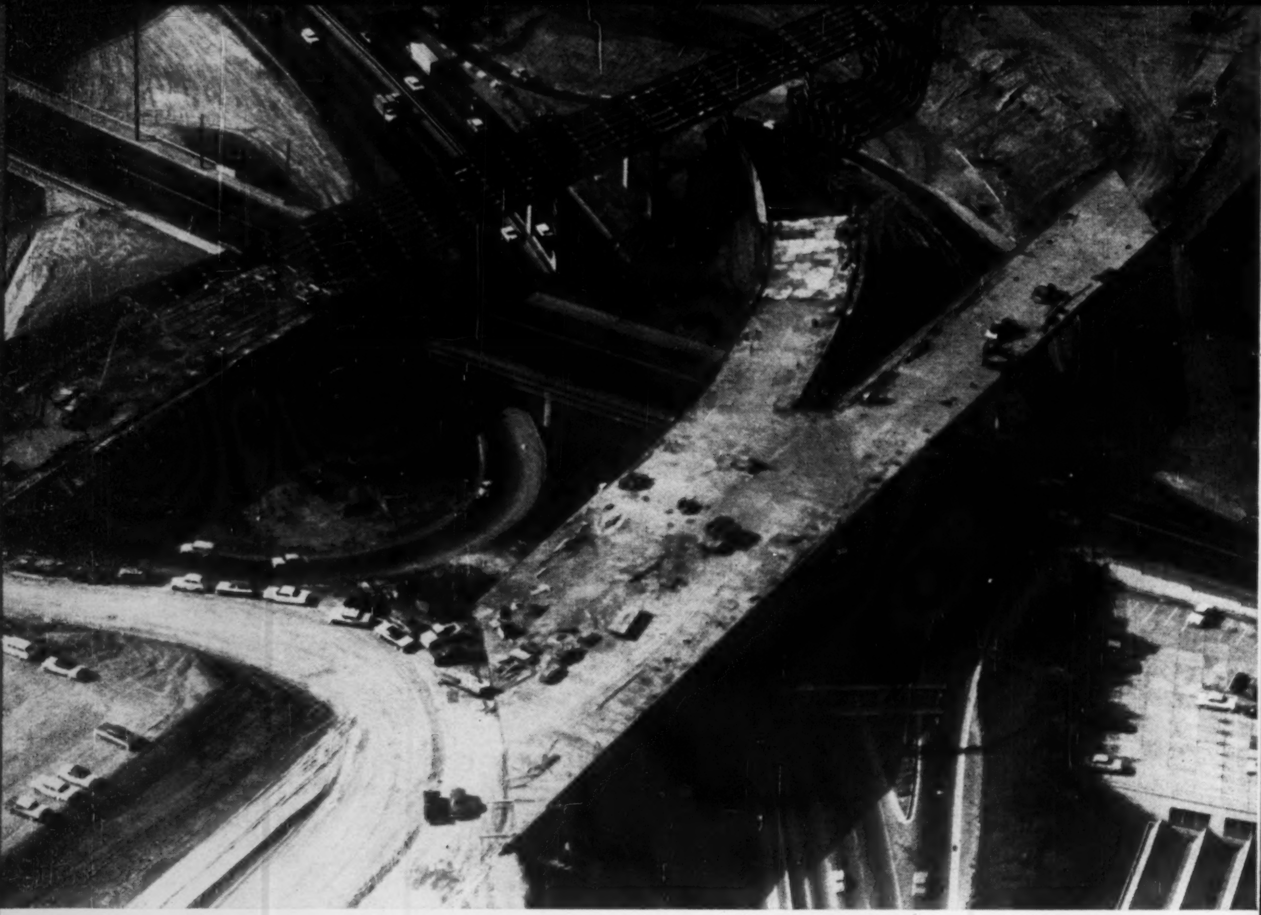
Penn-Dixie means Permanent Dependability

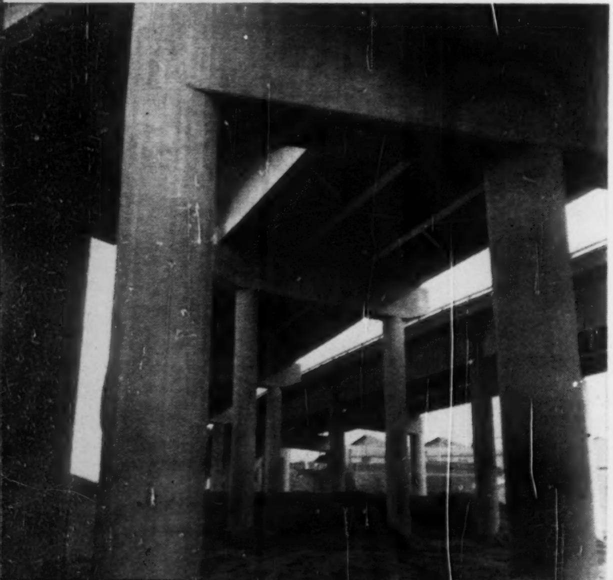
Architect: *Richard V. Richard, Albany, Ga.* • General Contractor: *A. C. Samford Inc., Albany, Ga.*

Knowing how one contractor meets

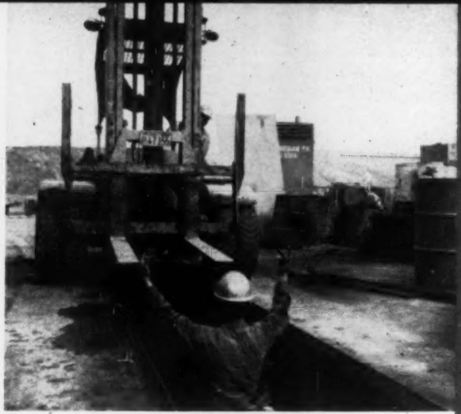
Mobil® Construction Project Study..



The 31 bridges are all of box-girder type construction and range from 100 feet to 1500 feet in length. Roadways vary from 24 to 45 feet in width. Kiewit used over 63,000 cubic yards of transit-mixed (subcontract) concrete in pouring bridge piers. Piling was drilled or driven from 30 to 75 feet into a sand-and-clay subsoil base. A dry-batch plant was set up to supply 21,000 cubic yards of concrete for paving roadway and bridge slabs. A total of six dry-batch trucks was used to transport the concrete from the batch plant to the paver.



Knowing how one contractor meets the demands of time, efficiency and profit may help you in your next job.



Portable lube pit, a Kiewit innovation, is moved from job to job. Made of steel and hooked up to power and a compressor, pit is simply placed into a hole and back filled. Convenient pit simplifies field lubrication.

Eight-hour night maintenance shift handled all the heavy equipment preventive maintenance work, leaving the day crew free for routine automotive work, record keeping and emergency work.

Kiewit maintained a complete history on all equipment. Cards were kept on repairs, oil changes and lube jobs. Motors were cleaned when trucks were serviced—truck bodies and beds were washed nightly.

How Kiewit builds $10,000,000 "spaghetti bowl" interchange

Peter Kiewit Sons' Co. erects 31 bridges —moves 1½ million yards of earth— in dense traffic area only 1½ miles long

Dubbed the "spaghetti bowl," this complex interchange project of 31 bridges was erected by Kiewit over and around existing elements of Los Angeles Freeway System. The entire project is concentrated in a section only 1½ miles long. Kiewit was forced to work around heavy traffic and construction crews working on public utility lines.

Kiewit carefully planned and co-ordinated the work to avoid interfering with traffic. Even with 180 pieces of equipment employed and over 1½ million yards of earth moved, traffic was able to move on all the numerous arteries at all times.

All fuel and lubricants were supplied by Mobil. Mobil also assisted in organizing a system for efficient field lubrication.

On your next job, take advantage of Mobil's system for cutting downtime...a job guide to PM & Supply

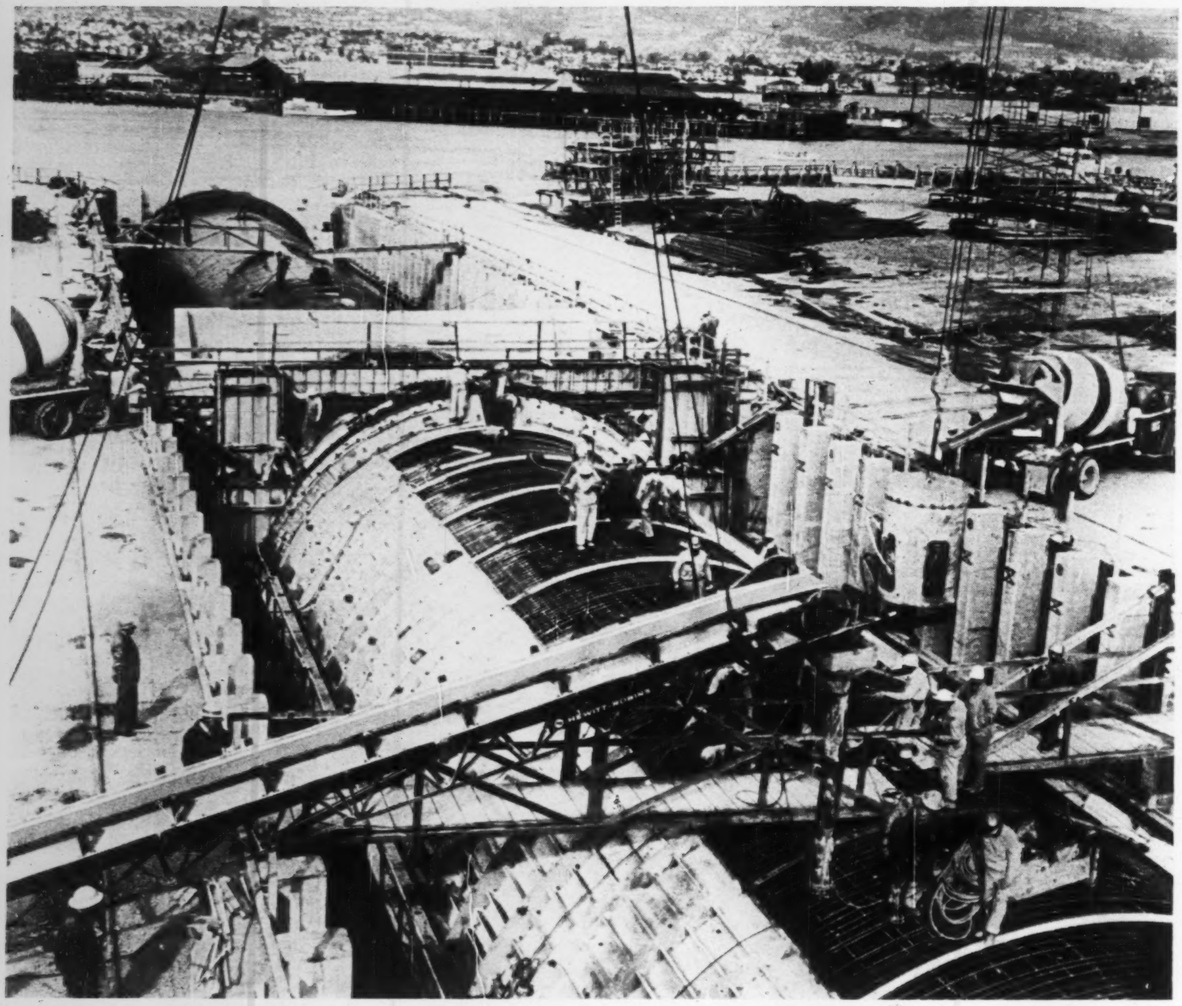
A Mobil Construction Project Study gives you simple and useful recommendations and information for each job. Mobil studies the needs of the equipment, the site, your schedule, and your procedures; you get all the following in one report: 1. complete product recommendations, descriptions and prices; 2. a carefully worked out lube plan; 3. delivery, storage, and dispensing recommendations; 4. an individualized preventive maintenance system; 5. full Mobil technical service and supply facility information . . . *plus* 6. a complete listing of near-the-job equipment and repair facilities, even eating and living accommodations. Have a Construction Project Study prepared by calling your Mobil Representative or by writing Mobil at the address below.

CONSTRUCTION PROJECT STUDY
Mobil

Mobil

MOBIL OIL COMPANY, 150 East 42nd Street, New York 17, New York

CIRCLE 63 ON READER SERVICE CARD



CREDITS: Owner, State of California, Department of Public Works, Division of Highways; Contractor, Pomeroy-Bates & Rogers-Gerwick.

Builders of Concrete Tubes Gain More Advantages with PLASTIMENT

In casting the twelve, 37-ft diameter, 200-ft long, segments of the new Webster Street Tunnel between Alameda and Oakland, California, the contractor chose **Plastiment,** the admixture which provided these specific advantages.

Increased workability at low slumps facilitated vibration and consolidation of the mix throughout the heavily-reinforced tubes. **Retarded set** extended the plastic period of the freshly-mixed concrete so that succeeding layers could be placed and vibrated together. **Rapid strength gain** speeded casting. Long-term advantages include **higher ultimate strength, minimum shrinkage** with consequent reduced cracking, and **greater uniformity.**

Plastiment is the admixture proven through years of on-the-job experience to provide specific and reliable advantages.

For full details about Plastiment Retarding Densifier, ask for your copy of Bulletin PCD-59. District offices and dealers in principal cities, affiliate manufacturing companies around the world. In Canada, Sika Chemical of Canada, Ltd.; in Latin America, Sika Panama, S.A.

Sika

SIKA CHEMICAL CORPORATION

Passaic, N. J.

Materials Price Changes in 22 Cities—Market quotations reported to Engineering News-Record

November prices	Quan-		U. S. Aver.		Atlanta		Baltimore		Birmingham		Boston		Chicago		Cincinnati		Cleveland		Dallas		Denver		Detroit	
Item, fob City (or deliv'd)	tity	Unit	1960	1961	1960	1961	1960	1961	1960	1961	1960	1961	1960	1961	1960	1961	1960	1961	1960	1961	1960	1961	1960	1961
Cement, Port, bulk	CL	bbl	$4.02	$4.02	$3.80	$3.69a	$3.93	$3.91a	$3.50	$3.50ei	$4.52	$4.53a	$4.02	$4.02a	$4.34	$4.34c	$3.89	$3.89ei	$3.25	$3.34a	$4.39	$4.39a	$3.91	$3.79a
Sand	TL	ton	2.47	2.31	1.85	2.00ah	2.25	2.25ab	2.13	1.30dh	3.00	3.00fhl	4.13	4.13agi	2.44	2.44aem	1.75	1.75bi	1.90	1.65a	1.42	1.42ag	2.16	2.16abgk
Conc, ready-mix 1:2:4, del	50cy	cy	14.33	14.21	13.75	13.00n	13.50	13.50	14.26	14.75i	15.00	15.00i	14.00	13.25e	15.00	15.00cn	17.25	17.25k	12.10	11.50q	11.90	11.90	15.50	15.50ae
Steel, struct, warehouse	base	cwt	7.65	7.79	7.29	7.52	9.70	9.70	9.00	9.00or	8.21	8.00ahlp	6.96	7.07aho	7.52	7.64ahor	7.35	7.46ahor	7.71	7.51aeh	8.12	8.24it	7.52	7.64eb
			8.91	9.13	8.29	8.15aj	.....	.....	.....	.....	9.31	9.30	8.23	8.34	8.79	8.91	8.26	8.73	9.49	9.18	.....	.....	8.79	8.91
new reinf bars, "	base	cwt	7.66	6.30	8.75	7.57	9.00	9.00	8.51	6.81aho	8.75	8.75r	6.80	6.30kG	8.16	8.21mr	6.70	6.70ir	9.00	8.50	9.25	9.35	7.37	7.37
			8.34	8.03	.....	.....	.....	.....	9.94	.....	.....	.....	6.90	6.45	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lumber, 2x4s, Douglas fir	CL	Mbf	115.90	115.01	.....	.....	125.00	117.50bi	121.00	126.00	118.00	127.00h	133.00	122.00c	101.00	101.00b	115.00	118.00c	.....	.....	118.00	114.00b	143.25	143.25
SLY pine	CL	Mbf	108.40	106.53	80.00	81.00a	102.50	87.50b	92.00	97.00a	108.00	121.00hn	111.00	105.00c	93.50	95.00b	100.00	100.00c	103.00	103.00j	.....	.....	142.00	142.00f
Brick, common backg, del	TL	M	39.17	41.29	33.20	33.25p	36.00	36.00	27.00	27.00f	43.50	43.50a	32.00	32.00	48.00	50.00ag	43.25	44.00j	30.00	32.00	35.00	35.00	53.00	53.50ah
Str clay tile, 3"x12"x12", del	2M+	M	188.91	193.15	186.10	154.95ao	217.00	217.00	135.00	135.00an	232.00	232.00l	137.00	137.00i	179.00	179.00adh	205.00	205.00g	162.00	162.06	170.00	170.00h	257.00	257.00h
Gypsum sheathg, ½"x2'x8', del	TL	Msf	62.48	61.65	68.00	62.50h	55.70	55.70	75.00	75.00g	55.00	56.00eg	62.00	62.50	51.16	51.16ag	65.00	53.75ch	56.25	57.50	67.00	66.75g	66.00	66.00i
Min wool insul, 3" batts, del	TL	Msf	68.13	66.52	70.00	67.80h	67.50	67.50	70.00	70.00	75.00	75.00g	80.00	80.00	60.00	60.00ag	77.00	70.00g	70.00	65.00	65.00	65.00f	52.00	52.00
Cast iron pipe (price index)	.....	.....	140.0	140.0	130.6	130.6	140.2	140.2	125.8	125.8	143.2	143.2	140.0	140.0	135.6	135.6	141.8	141.8	137.9	137.9	145.1	145.1	142.1	142.1
Sewer pipe, conc, 12", del	CL	lf	1.42	1.43	0.95	1.00ctu	1.01	1.01	1.75	1.75o	1.56	1.56o	1.30	1.30	0.85	0.85ht	1.35	1.35	1.27	1.27cm	1.05	1.05c	1.40	1.40x
vit clay, 12", del	CL	lf	1.40	1.46	1.04	1.09dt	1.20	1.20	0.90	0.95t	1.55	1.55fnqt	1.78	1.78ct	1.11	1.15	1.27	1.27oq	1.09	1.09ac	1.00	1.00dt	1.86	1.86dx

November prices	Quan-		Kansas City		Los Angeles		Minneapolis		New Orleans		New York		Philadelphia		Pittsburgh		St. Louis		San Francisco		Seattle		Montreal		Toronto	
Item, fob City (or deliv'd)	tity	Unit	1960	1961	1960	1961	1960	1961	1960	1961	1960	1961	1960	1961	1960	1961	1960	1961	1960	1961	1960	1961	1960	1961	1960	1961
Cement, Port, bulk	CL	bbl	$3.92	$3.97ag	$4.68	$4.68cf	$4.17	$4.17a	$3.65	$3.65a	$4.20	$4.20a	$3.99	$4.01ag	$4.62	$4.62bhi	$4.04	$4.09c	$3.79	$3.85c	$3.75	$3.75a	$3.11	$2.96di	$3.84	$3.84
Sand	TL	ton	1.85	1.70ab	2.41	2.41abn	1.60	1.60abi	2.16	2.16ag	2.30	2.30cgo	1.55	1.55ab	3.08	3.08abjl	2.90	3.00abn	2.12	2.12	4.25	4.25agk	2.40	2.40ab	2.05	2.05
Conc, ready-mix 1:2:4, del	50cy	cy	14.50	13.50	12.46	12.46box	14.20	14.55d	14.00	14.25j	17.60	17.60fm	13.90	13.90h	16.15	16.15j	13.88	13.87i	13.00	12.50g	14.70	14.70l	10.80	10.80ep	13.75	11.75i
Steel, struct, warehouse	base	cwt	8.78	9.90hw	8.44	8.70ahrt	7.78	7.78aho	.....	.....	8.02	7.85ahp	7.10	7.35ahp	6.96	7.07aho	7.19	7.30ah	8.43	9.40ahp	8.30	8.60ahs	7.90	8.60CFI	9.20	8.90z
			.....	.....	9.59	10.45	8.17	8.17	.....	.....	8.84	9.13	8.40	8.40	8.23	8.34	8.45	8.57orx	10.34	11.25	10.49	10.80	8.20	8.90yAFI	.....	.....
new reinf bars, "	base	cwt	8.21	8.21d	7.35	7.35nru	9.26	9.26w	8.00	8.60klpr	8.60	8.60or	8.23	7.93oG	7.35	7.35o	7.35	7.35am	9.85	8.25H	8.85	9.00es	7.00	7.00pyF	7.40	7.80
			.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....rx	.....	.....	.....	.....	7.50	7.50	.....	.....
Lumber, 2x4s, Douglas fir	CL	Mbf	120.00	120.00	91.00	94.00d	140.00	140.00e	98.00	106.00	118.00	123.00	125.00	114.50f	145.00	145.00g	127.00	120.00f	81.00	78.00	67.00	71.00a	.....	.....	.....	.....
SLY pine	CL	Mbf	120.00	120.00b	.....	.....	.....	.....	90.00	90.00	118.00	108.00	112.00	105.50f	135.00	135.00g	119.00	109.00f	.....	.....	.....	.....	79.00	83.00kl	82.00	82.00k
Brick, common backg, del	TL	M	34.00	34.00h	40.00	42.00p	49.50	49.50aeo	42.00	42.00	46.00	46.00a	40.00	40.00h	39.00	42.00l	44.00	44.00hr	43.00	43.00e	52.00	57.00l	18.25	48.25i	25.00	25.00m
Str clay tile, 3"x12"x12", del	2M+	M	158.00	158.00h	.....	.....	208.00	218.00ao	178.00	178.00	185.00	236.00b	208.40	259.00n	200.00	200.00l	180.00	180.00hr	156.85	156.85c	235.00	235.00al	168.78	168.78kst	169.00	169.00m
Gypsum sheathg, ½"x2'x8', del	TL	Msf	.....	.....	64.50	64.50h	75.00	67.00	60.00	57.00g	60.00	60.00g	52.50	52.00	63.00	63.00i	65.00	67.00gi	61.00	61.00h	65.00	73.00i	53.00	53.00k	64.50	64.50
Min wool insul, 3" batts, del	TL	Msf	75.00	75.00g	83.00	83.00h	80.00	70.00	70.00	70.00b	68.50	68.50d	50.00	47.00	55.00	55.00i	70.00	65.00	66.50	66.50h	58.00	58.00i	66.00	66.00k	65.50	61.00
Cast iron pipe (price index)	.....	.....	138.6	138.6	148.6	148.6	145.0	145.0	132.4	132.4	138.6	138.6	137.9	137.9	142.9	142.9	135.7	135.7	148.6	148.6	149.0	149.0	.....	.....	.....	.....
Sewer pipe, conc, 12", del	CL	lf	1.70	1.68t	1.24	1.30hr	2.19	2.19emw	1.41	0.95bl	1.50	1.50ac	1.50	2.00ak	1.66	1.66cm	1.75	1.75l	1.05	1.05as	1.95	1.90px	1.17	1.17m	1.05	2.90w
vit clay, 12", del	CL	lf	1.125	1.15t	1.78	1.86o	1.80	1.90cy	1.08	1.145t	1.76	1.76	1.44	1.44a	1.27	2.01u	1.23	1.26t	1.86	1.86ai	1.86	1.86gx	2.00	2.00j	1.50	1.43w

Footnotes are the same for both years

CEMENT: a less 10¢ disc, 15 days b less 2% disc, 15 days c less 10¢ disc, 10 days d delivered, 10¢ disc, 20 days e destination price f LCL g delivered h fob yard i truckload lots

SAND: a delivered b truck lots c barge lots asd d fob cars e 5 tons plus f 5-10 tons g per cy DISCOUNTS: h 2% 10 da i 2% 10th mo j 2% 15 da k 2% cash l 5% cash m 5¢ 10 da n 10¢ 10 da o 10¢ 15 da

READY MIX CONCRETE: MIX or STRENGTH: a 6-bag b 1:2½:3½ base price c 2000# d 2,500# see discount e 3,000# QUANTITY: f 6 cy plus del, Manhattan g 10-100 cy DISCOUNTS: h 1% 30 da i 2% 10 da j 2% 15 da k 2% 15th l 2% cash d 5% 30 da, see Mix m 25¢ 10 da n 25¢ 15 da o 50¢ cash TAXES: p Fed tax incl add 6% mun & prov tax DELIVERY: f Manhattan q zone 20-B

STEEL (Where two prices are shown the lower applies to fastest sellers, the higher to slowest moving items) a Varies by type & size QUANTITY: b 2,000-4,999# KC St Louis Cincinnati c 2,000-9,999 Seattle d 2,000-19,999 e 5,000-9,999 f 10,000-29,999 g 10,000-CL h 10,000# in 20,000# order i 20 tons plus Denver j 20,000# plus k CL DELIVERY: l fob city m incl in price shown n free in free zone o incl 15¢ Chicago, Cin Cl Det StL SF p add 10¢ Boston NY Phila Seattle q add 15¢ DISCOUNTS: r ½% 10 da s ½% cash t 2% 10 da u 2% cash v 2% 10th mo w 1% 10th mo TAXES: x add 2% sales y add province & municipal z incl 35¢ for tariff chgs A American Mfr C Canadian Mfr F Fed tax exempt for Bldgs G add 10¢ switch H intermed & hard grade I No change 1960-61

LUMBER: fir prices quoted on lengths up to 20 ft; pine, to 16 ft No. 2 common or better except as noted a fob mill b fob city out of yard c fob city direct mill shipment d LCL retail at yard e LCL retail delivered f CL delivered g truck lots delivered h alongside dock i No. 1 common j No. 3 common k spruce l tax exempt m incl rail freight fr NW mills, $11.50-15.00; fr. No. Calif. mill add $9.00 rail, $9.50 truck-all rates for surf stock, $3.00 higher for rough n hemlock

BRICK & STRUCTURAL TILE: DELIVERY: a truck lots b fob truck jobsite NYC c fob plant Stockton d 4M plus TYPE: e sand lime f rough g 80% common DISCOUNTS: h 2% 10 da i 2% 10th j 2% 15th k 2% 30 da l 2% cash m 2½% 10 da n 5% 10 da o 5% 10th p 50¢/M 10 da q $1/M 10 da TAXES: r add 2% sales s add 6% mun & prov t incl Fed tax

SHEATHING & INSULATION: DELIVERY: a fob city b fob warehouse c fob plant, frt allowed QUANTITY or TYPE: d 2-in e 8-10 ton f flame-proof $75 DISCOUNTS: g 2% 10 da h 2% 10th i 2% cash TAX: j add 2% sales k Fed tax incl

SEWER PIPE: DELIVERY: a delivered b fob plant c truck lots d LCL fob truck e CL f 35,000# min DEFINITION: g ES Extra Strength h SS Single Strength i SS 361-A j CSA A 60 k reinf ASTM C75-54 l reinf ASTM C76-55 m ASTM 76-57 n ASTM 13-57 o ASTM 72, 12" 1.55 p reinf q 1-ft lengths DISCOUNTS: r 1% 10 da s 1% 10th t 2% 10 da u 2% 15 da v 2% 15th w 2% 30 da x 2% cash y 5% 10th

No. 5 in a series of announcements on new HOUGH *machines*

This new 60-ton tractor is so different there is

nothing like it

in design, or in performance on push-loading and dozing work

For two years on several multi-million-yard earthmoving jobs a new idea in push-loading has been under extensive and sustained operation behind a variety of scrapers. This new idea is the HOUGH D-500 PAYDOZER — a different and better kind of rubber-tired pusher and dozer as shown by its performance on these projects.

More Power. A 700 hp turbo-charged V-12 Cummins diesel is governed to 2100 rpm and 600 hp for longer life and lower maintenance. Two newly-developed, high-efficiency dry-type air cleaners plus filtration of all oil circuits are provided.

Articulated Hydraulic Steering is one of the most unusual features and gives exceptional maneuverability. The turning radius is under 25-ft.—considerably less than its overall length and one-third less than a comparable unit with rear-steer. The rear wheels always track the front ones and always follow in the path cut. Combined with 30° rear-axle oscillation, this articulated steering keeps "all four feet" on the ground and also permits a twisting "walk-out" action in poor footing.

Wide-range Drawbar Horsepower. The power train includes a 3-stage, single phase, torque converter, a HOUGH-built full-power-shift transmission, power-transfer differentials in *both* axles and planetary hubs in all wheels. This drive train provides 80% of peak draw-bar horsepower over 75% of the entire speed range so it can push-load efficiently with a wider range of scraper sizes.

Three-way Blade and Push Block. Blade is 160" wide—extending 10" beyond the wheel path on each side, and has special reinforced center area for pushing. Six-way hydraulic control includes raise, lower, tilt to each side, forward and backward pitch. Modified wings help retain the load while adjustable stabilizer shoes permit precise grade control. A separate pusher block is optional.

Unusual Stability and Smooth Riding are features the operator will notice and appreciate. These are achieved by the approved use of dry ballast material (100% heavier by volume than liquid) in all four tires. It lowers the center of gravity and also reduces the bouncing action usually found in unsprung machines. Standard tires are 33.5 x 33-26 PR, with options including 37.5 x 33. The 4-wheel brakes are air- controlled with dual pedals for operator convenience.

High Availability. One example of the many extra features in this unit to keep it profitably at work and reduce downtime is the separate fan-cooled oil-to-air cooler to effectively control transmission-converter oil temperatures. Full-shift fuel capacity is provided. An optional central lubrication system can be furnished that automatically lubricates 27 different points every 30 minutes of operation.

Your HOUGH Distributor is ready to show you why there is nothing like the D-500 PAYDOZER.

THE FRANK G. HOUGH CO. 12-B-1
772 Sunnyside Avenue, Libertyville, Ill.

Please furnish complete data on the D-500 PAYDOZER

Name

Title

Company

Street

City State

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY · INTERNATIONAL HARVESTER COMPANY

HOUGH, PAYLOADER, PAYDOZER, PAYMOVER, PAYLOGGER, PAYLOMATIC and PAY are registered trademark names of The Frank G. Hough Co.

HOUGH®

PAYDOZER
HOUGH
HOUGH
D500

PAYDOZER®

Litho in U.S.A.

PAYLOADER®

Before you buy any tractor-shovel in the 2 to 3 cu. yd. class consider the

availability

designed into this new Model H-70C

You can't make money when your equipment is idle. "Down-time" is more costly in terms of lost production or yardage than it is in repair and parts costs. Machine availability—time *on* the job—is therefore one of the most important considerations when selecting any piece of equipment.

That is why HOUGH engineers have designed into this new H-70C, features that insure maximum job availability . . . features made possible only by HOUGH'S long, extensive experience . . . features not found in any other tractor-shovel in the industry.

Heavy-duty Design and Construction: This new H-70C weighs a full 22,000 lbs. without ballast, and is built around a massive structural steel frame—twist-proof and shock-proof—to keep all components in alignment. The huge, heavy-duty axles specifically designed for tractor-shovel service, the precision-engineered HOUGH-built transmission, the dependable engine with plenty of reserve power, and the most effective hydraulic system, all combine to provide utmost dependability and freedom from breakdown on the job. And in addition, in the production and assembly of all HOUGH machines, components and complete machines are fully tested by the most modern scientific instruments available—including final chassis dynamometer testing.

Less Maintenance Required: The simplicity of PAYLOADER design, plus the special attention given to protecting points of normal wear, cut "down-time" and maintenance costs tremendously. The simplified boom mechanism has as many as ten fewer pivot and grease points than other tractor-shovels, which means fewer parts to service and maintain. A single bucket-control cylinder cuts in half the number of cylinders, piping, hoses, linkages and wear points found on all other tractor-shovels. In addition, pivot points on boom, bucket mechanism and steering are fitted with "O" rings and other seals that keep dirt out and grease in.

Front wheel brakes are sealed against dust and dirt. The hydraulic system is closed and pressure-controlled to exclude even air-borne dust and moisture. A large-capacity two-stage, dry type, air cleaner protects the engine even under adverse conditions.

Faster and Easier to Service: No other tractor-shovel provides the easy, time-saving access to all machine components for inspection, service, repair or maintenance. Large, removable engine side covers expose the entire engine for easy access unobstructed by fenders, hydraulic cylinders or other components. Easily-removed access panels allow quick checking of oil levels, checking and adjustment of operating and hydraulic controls, batteries and other essential components. The low fuel tank refills from ground level—has full-shift capacity.

The cylindrical-vessel-type oil reservoir is outside-mounted and has a full-diameter cover that is easily removed for complete inspection and servicing of its two full-flow micronic filters.

Only a PAYLOADER gives you simplicity of design, the built-in protective features, the ease of accessibility that means more hours on the job, and also more yardage per hour. Only the model H-70C gives you a tractor-shovel with all these PAYLOADER advantages, plus more horsepower per pound, more dumping clearance and more reach than the average of all tractor-shovels in its class. Your HOUGH Distributor will be glad to tell you more about it and show you what it can do.

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY - INTERNATIONAL HARVESTER COMPANY

HOUGH, PAYLOADER, PAYDOZER, PAYMOVER, PAYLOGGER, PAYLOMATIC and PAY are registered trademark names of The Frank G. Hough Co.

HOUGH®

THE FRANK G. HOUGH CO. 12-B-3
772 Sunnyside Avenue, Libertyville, Ill.

Send full data on Model H-70C 2½ yd. PAYLOADER

Name __________
Title __________
Company __________
Street __________
City __________ State __________

Materials Prices Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Iron & Steel Products, Pipe: Last, Dec. 14; Next, Jan. 11.
- Cement, Aggregate, Ready-Mixed Concrete, Asphalt: Last, Dec. 7; Next, Jan. 4.

LUMBER, TIMBER, PLYWOOD— + or — *denote this price is higher or lower than last month's price*

Item		Unit	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh	St. Louis	San Francisco	Seattle	Montreal	Toronto
LUMBER, TIMBER																								
1x6s4s	Pine	Mbf.	82 00	85 00	80 00	......	104 00	91 00	94 00	105 50	......	108 00	105 00	......	102 00	80.00	89 00	92 00	......	+89 00	......	......	79 00	+90 00
	Fir	"	100 25	90 00	102 00	......	101 00	92 00	......	......	......	96 00	105 00	78 00	......	93 00	93 00	......	......	89 00	−70 00	60 00	......	......
1x8s4s	Pine	"	85 00	85 00	81 00	......	107 00	93 00	+100 00	105 50	......	110 00	105 00	......	104 00	+82 00	89 00	93.00	......	+91.00	......	......	81 00	+93 00
	Fir	"	91 00	90 00	97 50	101 00	103 00	94 00	......	......	......	98 00	105 00	73 00	......	93 00	93 00	......	......	89 00	−70 00	65 00	......	......
2x4s4s	Pine	"	82 00	85 00	100 00	98 00	106 00	98 00	105 00	107 50	......	104 00	100 00	......	−96 50	90 00	−92 75	−91 75	96 00	−94 00	......	......	79 00	88 00
	Fir		106 50	105 00	104 00	108 00	110 00	106 00	−108 00	99 25	99 50	107 00	105 00	83 00	......	96 75	−96 25	−100 25	105 00	−99 00	−78 00	73 00	......	106 00
2x6s4s	Pine	"	83 00	87 00	100 00	98 00	106 00	98 00	−101 00	107 50	......	104 00	105 00	......	−96 50	88 00	−92 75	−91 75	96 00	+94 00	......	......	79 00	86 00
	Fir		104 50	105 00	104 00	108 00	110 00	106 00	−108 00	99 25	98 50	101 00	110 00	83 00	......	96 75	−96 25	−100 25	105 00	−99 00	−78 00	73 00	......	−105 00
2x8s4s	Pine	"	85 00	88 00	99 00	98 00	113 00	98 00	104 00	123 50	......	114 00	105 00	......	−95 25	90 00	97 75	92 00	96 25	+96 00	......	......	95 00	91 00
	Fir		107 25	110 00	108 00	108 00	113 00	107 00	−113 00	......	97 50	110 50	110 00	84 00	......	98 25	−96 00	−101 00	105 75	−99 00	−78 00	73 00	......	107 00
2x10s4s	Pine	"	90 00	90 00	102 00	113 00	115 00	105 00	110 00	123 50	......	118 00	115 00	......	−96 00	95 00	100 00	92 75	97 00	−102 00	......	......	125 00	90 00
	Fir		109 00	110 00	110 00	118 00	118 00	112 00	112 00	......	100 52	118 00	115 00	84 00	......	98 25	−99 25	−101 75	106 50	−104 00	−78 00	75 00	......	108 00
3x12Rgh	Pine	"	105 00	127 50	105 00	......	125 00	112 50	......	137 50	......	......	......	......	122 25	115 00	118 00	......	......	125 00	......	......	......	105 00
	Fir		123 25	126 00	133 50	138 00	125 00	130 00	136 00	......	116 50	−181 00	135 00	91 50	......	120 75	−120 25	−121 50	123 25	+130 00	−82 00	87 50	......	119 00
6x12Rgh	Pine	"	115 00	127 50	105 00	148 00	135 00	135 00	......	171 00	......	......	......	......	111 50	+120 75	118 00	......	......	135 00	......	......	......	......
	Fir		123 25	136 00	133 50	158 00	128 00	130 00	136 00	......	114 50	−181 00	165 00	91 50	......	120 75	115 25	−118 50	123 25	+130 00	−99 00	91 00	......	123 00
12x12Rgh	Pine	"	130 00	128 50	120 00	......	135 00	135 00	......	178 00	......	......	......	......	112.50	120 00	118 00	......	......	135 00	......	......	120 00	......
	Fir		120 25	136 00	135 00	......	128 00	135 00	136 00	......	107 50	−181 00	165 00	91 50	......	120 75	117 00	−115 50	120 50	+130 00	101 00	91 00	......	123 00
FIR PLYWOOD (a)																								
⅝" Int. Plyscored, CD gr.		Msf.	125.00	+129.00	121.57	116.90	−139.00	116.45	−114.40	125.00	110.25	116.45	125.00	91.80	117.45	−120.50	+116.15	+110.15	109.20	−109.37	94.00	94.00	119.25	+201.00
¾" Exterior Plyform, BB gr.		"	225.00	+220.50	196.21	211.40	−232.00	204.70	205.50	212.50	210.00	204.70	205.00	152.60	−192.15	−152.55	204.60	197.30	197.30	200.93	174.00	180.00	225.95	+236.00

Fir-Random length, 75% construction grade, 25% standard grade, 30,000 bf, green stock, grademarked. Pine-Random length, #2 common and better. Southern Pine Inspection Bureau grademarked, 30,000 bf. Lumber prices include freight from mill to city and cost of unloading and trucking full carlot to jobsite. *a Certificated stock, carlots, fob city. *b Hemlock, 75% construction grade, 25% standard grade. *c Spruce. Fir plywood prices, per Msf. fob Northwest mill: CD grade interior sheathing—½" $75-76, ⅝" $84-86; BB grade Plyform—⅝" $150.00, ¾" $170.00. *d Nominal. *e Exterior.

WINDOW GLASS, Discounts from Jobber's list, Feb. 1, 1950 (a) sales tax extra—single or double strength

	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh	St. Louis	San Francisco	Seattle	Montreal	Toronto
A quality	78%	74%b	82%c	70+10%eg	70%	72%	72-2-10%	70%	73%-10	72-10-10%	76-10-10%	$12.88/17.32	70-10%	76%d	79%	80%	76%	74-10-10%ef	60%	$8.85/11.55di	40-10-5%a	$6.49/9.50
B quality	80%d	74%b	83%c	70+10%eg	70%	72%	72-2-10%	70%	73%-10	72-10-10%	76-10-10%	$10.45/14.13	70.10%	76%d	79%	80%	76%	74-10-10%ef	73%	6.41/8.07di	40-10-5%a	5.90/8.77

Glass: *a Jobber's list price per box, 14 x 20, ss. $42.75 for A quality, $37.50 for B quality; 14 x 20, ds. $60.00 for A quality, $52.75 for B quality. *b sales tax extra. *c 77% for single strength. *d From 6/15/52 list. *e 77% for double strength. *f Single strength; double strength, 83%. *g From 8/1/58 list. *h ss/ds, 40-in. *i 20 boxes min.

EXPLOSIVES per lb, 40% Ammonia Gelatin in 50 lb cases delivered in 500 lb lots (non-seismograph grades)

Urban Areas	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh	St. Louis	San Francisco	Seattle	Montreal	Toronto
	$0.2595	$0.2795	$0.2595	$0.2795	$0.2795	$0.2595	$0.2595	$0.2870	$0.2795	$0.2795	$0.2795	$0.2795	$0.2795	$0.2795	$0.5130g	$0.2795	$0.2595	$0.2795	$0.2795	$0.2795	$23.20b	....

Explosives: Cartridges of 1¼" diameter or over, in standard lengths. *g deliveries in certain areas must be by truck or by truck and boat, requiring extra charge. *h fob Beloeil (near Montreal), per 100 lb., lots under 2000#, wood cases, forcite, 40%. Forcite 60%, $24.30 in fiber cases; forcite 40%, $24.05; forcite 60%, $25.80. Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40% in U. S., $1.75 per 100 lbs. higher in Canada.

Non-Urban Areas	C/L 30,000 lb. lots	10,000 lb. lots	2,000 lb. lots	200 lb. lots
Group 1*	$0.21.95	$0.22.95	$0.26.45	$0.27.95
Group 2†	.22.70	.23.70	.27.20	.28.70

*All areas except those in Group 2 and N.J. cities of Bayonne, Hoboken, Jersey City, No. Bergen, Union City and Weehawken † Florida counties of Manatee, Hardee, Highlands, Okeechobee, St. Lucie and south thereof; Idaho; Maine; Montana; New Mexico counties of Catron, Socorro, Lincoln, De Baca, Roosevelt and south thereof; Texas counties of Bailey, Lamb, Hale, Floyd, Motley, Cottle, Hardeman, Foard, Knox, Haskell, Jones, Taylor, Coleman, McCulloch, San Saba, Burnet, Williamson, Milan Robertson, Leon, Houston, Angelina, Nacogdoches, Shelby and south thereof.

PILES prices per linear foot, fob cars, New York

Dimensions	Points	Length	—By Rail— Pine*§	Fir	Dimensions	Points	Length	—By Rail— Pine*§	Fir
12" at butt	6-in.	30 to 39-ft.	$0.42a	....	14"—2-ft. from butt	6-in.	65 to 69-ft.	1.21	....
12"—2-ft. from butt	6-in.	40 to 44-ft.	.91	....	14"—2-ft. from butt	6-in.	70 to 74-ft.	1.34	$1.40
12"—2-ft. from butt	6-in.	45 to 49-ft.	.97	....	14"—2-ft. from butt	6-in.	75 to 79-ft.	1.41	1.40
12"—2-ft. from butt	6-in.	50 to 54-ft.	1.01	....	14"—2-ft. from butt	5-in.	80 to 84-ft.	1.54	1.45
12"—2-ft. from butt	6-in.	55 to 59-ft.	1.07	....	14"—2-ft. from butt	5-in.	85 to 89-ft.	1.67	1.54

* Pine piling over 90 feet available only in limited quantities. § ASTM Class B *a, trucked in from N. J. Prices per linear foot, fir and pine, rough peeled, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine under fifty feet based on freight from mid/South, over fifty feet, on freight from deep south.

RAILWAY TIES

Prices f.o.b. per tie box carload lots:

		6" x 8" x 8' Untr.	6" x 8" x 8' Tr.	7" x 8" x 8'6" Untr.	7" x 8" x 8'6" Tr.
Birmingham*	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.50	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.00	" 3a 1.70	2.78
Chicago	Red Oak	2.85-3.00	4.00a-4.10	3.90	4.75
New York	Mixed Hardwood	3.45	5.10	4.30	6.50g
	Mixed Oak	3.55	5.20	4.40	6.60g
Philadelphia	Mixed Oak	3.80i	3.97	4.37	4.65-4.75
St. Louis	Mixed Oak	2.65h	3.75b	3.05b	4.10b
San Francisco	Douglas Fir	1.95e	3.10e	2.20ef	3.15ca

Tr.—Treated; Untr.—Untreated. *a Creosoted. *c Empty cell. *e Green *f f.o.b. cars. *g 7 x 9 x 8'6" * Add 75¢/tie freight charge to Birmingham. *h 7" x 9" x 8½. *i Mixed Hardwood

CHEMICALS Water, sewage treatment, road work, carlots, f.o.b. works

Chlorine cylinders, liquid, per lb. freight allowed, N. Y. State	$ .11	Silicate of soda, 52 deg., in drums, per 100 lb.	2.65	Sulphate of aluminum, commercial, in 100-lb. bags	2.05
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, ton	32.00	Soda ash, 58%, in paper bags, per 100 lb. dense	1.90	Sulphate of copper in bags, 99% per 100 lb., reg., 25.2% copper content	12.50

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Address______________________________

Firm______________________________

City________________ Zone____ State________

Materials Prices Monthly Market Quotations By ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Cement, Aggregate, Ready Mixed Concrete, Asphalt: Last, Dec. 7; Next, Jan. 4.
- Iron & Steel Products, Pipe: Last, Dec. 14; Next, Jan. 11.

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

Item	Unit	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver mm	Detroit mm	Kansas City mm	Los Angeles	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh pp	St. Louis	San Francisco mm	Seattle	Montreal	Toronto
STRUCTURAL CLAY TILE																							
partition-scored																							
3x12x12 in	M	$154.95pe	$217.00	$135.00pss	$232.00†	$137.00ll	$179.00mmjvv	$205.00ff	$162.00	$170.00	$257.00	$158.00	r	$218.00pe	$178.00	$236.00wwh	$259.00ss	$200.00t	$180.00mmpp	$156.85*	$235.00pt	$168.78uqoo	$169.00rr
4x12x12 in	"	154.95pkke	231.00	152.00pss	248.00†mm	149.00ll	190.00mmjvv	219.00ff	162.00	185.00	274.00	158.00	r	225.00pe	178.00	236.00wwh	275.00ss	213.00t	199.00pp	177.10*	270.00pt	180.93auqoo	185.00rr
8x12x12 in	"	309.90pe	434.00	....	463.25†mm	280.00ll	355.00jddmm	410.00	318.75	310.00	514.00	312.00	r	452.00pe	371.25	378.00wwch	517.00ssxx	400.00t	380.00pp	235.30dd	490.00pt	325.00ausqoo	360.00rr
Load Bearing—Scored																							
8x12x12 in	"	387.40pe	491.00	303.00p	556.00†mm	....	390.00jmmvv	465.00ff	387.75	310.00	582.00	312.00	r	225.00pwe	371.25	360.00wwhn	597.00ss	453.00t	410.00pp	159.40qq	265.00pwt	220.00qoo	281.50rr
10x12x12 in	"	....	602.00	376.00p			422.00jmmvv	....	472.50	390.00	767.00	400.00	r	....	....	....	....	607.00t	440.00pp	....	....	400.00qoo	405.00rr
12x12x12 in	"	....	690.00	465.00p	....	....	500.00jmmvv	709.00f	385.00	442.00	876.00	500.00	r	....	....	....	....	693.00t	621.50pp	....	....	....	506.00
BRICK, common backing	"	33.25uu	36.00	27.00ff	43.50p	32.00	50.00jk	44.00tt	32.00	35.00xz	53.50pmm	34.00	$42.00uu	49.50vpe	42.00	46.00p	40.00mm	42.00t	44.00mmpp	43.00*	57.00t	48.25bjl	25.00rr
Straight hard	"	33.25uu	41.00	38.00jj	58.00p	34.00	49.00jk	18.00ggtt	53.00	54.00	54.00pmm	34.00	44.00	58.00ype	55.00	....	45.00mm	40.00t	45.50pp	43.00*	71.00t	56.30bll	60.00rr
LIME, in paper, Hyd. fin.	ton	42.50hh	35.80	38.28mm	42.00§	1.00aaii	29.20jmm	32.75ptt	38.36	48.00p	38.00mm	36.26	38.00nnl	47.20bbe	48.00p	46.00p	40.00mmp	30.00t	1.00aapp	29.24	52.00bbt	39.00	34.00mm
" " Com hyd.	"	35.50hh	23.40	20.87mm	34.00§	0.90aliaa	29.20jmm	28.00ptt	23.32	44.00p	30.00mm	34.26	38.00nnl	40.00bbe	32.00p	40.00p	24.00	26.00t	0.80aapp	29.24	38.00bbt	22.00	36.40mm
" " pulverized	"		.....	26.33gmm	....	....	29.20jmm	....	26.00	46.00p	40.00mm	29.76	39.00nnl	48.00bbde	....	....	27.00	34.00t	1.35zaapp	31.74	1.30mbbt	13.25	34.75mm

•§ F.o.b. yard. •* F.o.b. plant Stockton. •† F.o.b. yard Roxbury. •a Smooth. •b $4.50 del. •c 8 x 12 x 12 in.-6 cell. •d Pulverized hot. •e less 5% disc., 10th. •f 8 x 8 x 12. •g Lumps, $26.72. •h F.o.b. trucks, job site N.Y.C. •i 60 lb sacks. •j Truck load or over. •k $1.00 discount per M, 10 days. •m Per bb. 180 lb. processed. •n 7¾ x 7¾ x 12. •o Mason's double hydrated pressure. •p Truck lots. •q Provincial and Municipal tax extra (6%). •r Not used: earthquake danger. •s 8 x 16 x 12. •t less 2% disc., cash. •u Incl. Federal tax. •v Sand lime. •w 5 x 8 x 12. •x dumped. •y Chi common. •z Pebble; 80 lb sack. •aa 50 lb sack. •bb LCL. •dd 6 x 12 x 12. •ff 80% common. •gg Smooth. •hh less 25¢ disc., cash. •ii F.o.b. plant. •jj rough •kk 3½ x 11½ x 11½. •ll less 2% disc. 10th. •mm less 2%, 10 days. •nn F.o.b., L. A. •oo less 2%, 30 days. •pp add 2% sales tax. •qq 8 x 5½ x 11½. •rr 2½% disc., 10 days. •ss 5% disc., 10 days. •tt less 2% disc., 15th. •uu less 50¢/M, 10 days. •vv 4000 pcs. and over. •ww Now manufactured in perodic instead of tunnel kiln.

PAINT, ROOFING—F. O. B. CARLOAD LOTS

Item	Unit	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh	St. Louis K	San Francisco	Seattle	Montreal	Toronto
LEAD, red, dry	CWT	$14.35ggJO	$17.50pp	$26.00†J	$24.95†oomm	$15.25rjqqpp	$15.25†JO	$25.65†	$22.50	$23.85n	$15.95r	$33.15ggool	$16.25yy	$15.25N	$23.00Jpp	$14.00ocO	$14.75mmO	$21.50mggJ	$25.65†m	$26.70mm	$13.35HO	$19.45O	$14.20
White, in oil	"	24.00ggJ	24.00	29.00†J	26.90†mmm	24.00†J	24.00†J	26.90†	23.50M	24.00	24.00rr	28.65	22.00	21.50kk	24.00J	29.75	19.00mm	24.00J	26.90	26.90mm	24.00H	26.00wtt	21.00
READY-MIXED PAINT																							
Graphite b	ga	....	3.00	3.90J	....	....	....	3.36ggP	......	3.70	....mm	4.04	3.30	....	....	....	3.35mm	2.20#EJ	....	3.20mm	....	5.52Dfft	5.15J
Aluminum	"	4.10	4.40	3.40J	....	....	....	3.64zzgg	3.25B	5.10	....mm	3.48	4.50n	....	....	....	3.90mm	2.25#FJ	....	4.30mm	4.19ccffJ	6.55xff	6.18J
Ferric Oxide	"		3.50		....	....	....	4.29qgg	......	......	....mm	3.06	4.20n	....	....	....	3.65mm	2.25#GJ	....	3.50mm	....	5.10kfft	5.95J
ROOFING SUPPLIES	square	3.15kk	3.06	2.95†mm	3.55q	3.45ukk	2.99mm	3.05q	3.00u	2.94	2.85mm	3.21mm	3.40nkk	2.85kk	$2.78	2.60xx	......	2.90sH	2.99iismm	2.87mm	3.34ccH	5.40	2.90
Rolls, slate surf	CWT	2.30kk	3.67	2.17ii†mm	2.60q	2.75okk	2.20mm	2.25o	2.75o	2.25o	2.10omm	2.68omm	2.40njkk	2.10hikk	1.98	1.90xxo	2.65	2.15sH	2.54hh	1.72aaiimm	2.89hccH	4.65f	2.15aae
Asphalt felt	"	2.43	4.04	2.17ii†mm	3.04q	3.15okk	2.65omm	2.55o	2.75o	2.80o	2.55omm	2.68omm	......	2.55bikk	2.85	2.29o	2.55	2.15H	3.07hh	2.59mm	....	4.65f	2.15o
Asphalt coating	gal.	0.72kk	0.50	0.76ffmm	0.55q	48.00bbkk	0.56ymm	0.41y	0.47o	0.50ff	0.56ffmm	0.59y	0.75nykk	0.52ikk	0.68	0.52z	0.74	0.56H	0.67y	0.46jj	0.66cc	1.60	0.63j
tar pitch	ton	49.00	54.00	48.00eemm	60.00	57.70†kk	57.96Hmm	49.00gg	65.00hh	50.00	49.00mm	....	s.....	50.00rkk	45.50	49.00*	49.00	55.00H	57.60	54.00	....	4.40uu	48.00A

•† Delivered. • Note: Red lead in oil 50% higher than white lead in oil. •* Aver. wt. approx. 425 to 550 lb drums. •a Red lead prices change frequently due to pig lead price changes. •b U.S. War Dept. Spec. 3-49A. •c ASTM Spec. D266-31. •d 80% minimum ferric oxide. •e Per 108 sf roll. •f Per 432 sq ft. •g F.o.b. yard Roxbury. •h Per roll, 65 lb. •i Net carload prices, Minneapolis and vicinity. •j 45 gal containers. •k Over 80% ferric oxide. •l Not used. •m 100 lb keg. •n F.o.b. city. •o Per 60 lb roll. •p 6-drum, 50 gal each. •q Per 90-lb roll. •r F.o.b. factory, Chicago. •s Truckload. •t Incl. Federal tax. •u Per 90-lb square. •v Per ton. •x Ready-mixed. •y 55-gal container. •z Drums. •aa 15 lb. •bb Roofers coating and cement. •cc LCL, truck delivery. •ee Asphalt pitch in 100 lb package. •ff 5-ga drums. •gg F.o.b. Cleveland factory. •hh Incl. freight. •ii Per 324 sf roll. •jj Asbestos roof coating. •kk less 2% disc., 10th. •mm less 2% disc., 10 days. •oo 100 lb bbls. •pp 50 or 100 lb bags. •qq 500 lbs or more. •rr F.o.b. plant, Detroit. •ss 50 lb bbls. •tt 25 lb kegs. •uu 250 lb bbls. •xx Sept.: Rolls revised to $2.75, Asph. Felt revised to 1.71. •yy Sept. revised to $12.00. •zz Sept. revised to $2.80. •A 400 lb barrels. •B ASTM Spec. D962-49. •C 95%. •D Std. black. •# Milt. spec.: •E TTP27; •F TTY81; •G TTP31. •H less 2% disc., cash. •I Per 100 lb. •J less 1% disc., 10 days. •K add 2% sales tax. •L CL. •M 1 ton or more. •N under 500 lbs, add $1. •O 50 lb. bag

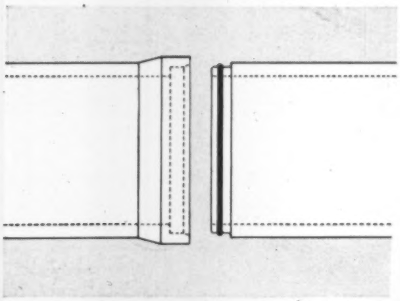
PLASTER, VERMICULITE AND METAL BUILDING SHEETS

Item	Unit	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh	St. Louis uu	San Francisco	Seattle	Montreal	Toronto
PLASTER, neat	ton	$33.00ss	$24.00	$37.00ss	$26.00	$1.45bbtt	$24.95*ss	$29.00*ss	$32.80	$29.00	$28.00ss	$30.00	$28.00tt	$34.50F	$34.00	$27.00	$26.25	$30.00nn	$30.00	$29.50ss	$42.40nn	$22.60h	$32.00
gauging	"	45.00ss	35.70	43.00ss	30.00	1.45bbtt	24.95*	45.00N	35.60	29.00	28.00ss	35.00	29.00tt	34.50F	42.00	35.00	31.00ss	31.00nn	43.00	30.50ss	45.60nn	35.60h	50.00
VERMICULITE																							
Home insul. pellets	4 cf bag	1.65sss	0.95	1.55ss	1.40	1.55	1.75*ss	1.39ss	1.05	1.63	1.27ss	1.24E	1.25	1.65tt	1.38P	1.35	1.50ss	1.25nn	1.55	1.38ss	1.55nn	1.25h	1.47bb
plaster agg.	"	1.65sss	....	1.55ss	1.40	1.60	1.75*ss	1.34ss	1.21	1.40	1.31ss	1.26E	1.20ktt	1.80F	1.36P	1.38	1.45ss	1.30nn	1.60	1.38ss	1.35knn	1.40h	1.43bb
concrete agg. treated	"	1.85sss	....	1.60ss	1.40	1.60	1.85*ss	1.45ss	1.37	1.501	1.40ss	1.34E	1.45	1.95Fl	1.42P	1.50	1.55ss	1.40mm	1.65	1.50ss	1.85lnn	1.60h	1.66bb
PERLITE, plaster agg.	"	1.65ss	1.15	1.27ss	1.55ss	1.60	1.75ss	1.45ss	1.21	1.50ss	1.45kii	1.26	1.16	1.40S	1.15P	1.45	1.30ss	1.40nn	1.55	1.38oss	1.50k	1.15v	1.14Q
concrete agg. untreat.	"	1.65ss	1.55	1.27ssl	1.55ss	1.60	1.75ss	1.45ss	1.32	1.60ss	1.50kii	....	1.26	1.50S	1.25P	1.40	1.40qqss	1.40nn	1.60	1.58oss	....	1.15v	....
BUILDING SHEET																							
Alum. flat, .100"	lb	0.469noo	0.469	0.459M	0.474	0.514x	0.469	0.449aa	0.459	0.479	0.469a	0.469	0.449	0.459	0.469	0.479aT	0.464	0.475	0.469	0.575	0.50D	43.95AH	0.4375
corr. roof, .032"	sheet	9.86nY	0.451r	9.66K	25.07AAp	33.10p	9.35	24.51p	0.463	10.89	9.35a	26.74ggyyp	8.77Z	10.09	33.43	25.54aXAA	8.86	10.39	9.56	10.83	11.25D	12.10H	26.00ap
Stainless steel, 20 ga	CWT	61.25nxx	58.19	64.50K	62.66ddxx	58.34ee	56.66xx	58.50ooxx	60.50	65.32gg	58.35axx*	67.50E	60.11	63.61GR	59.19Y	62.33a	58.86	63.00	61.64Kmmgg	65.00K	60.10D	65.75H	73.74
28ga	"	71.25nxx	67.69	73.00K	72.67dd	67.84ee	65.91xx	68.00ooxx	83.50	73.57gg	67.85axx*	76.25E	69.61	69.61ffG	68.69Y	72.33	68.36	74.50pp	71.64ygg	77.25K	69.60D	....	86.52

•‡ trucklots, delivered •† fob warehouse. •* fob city. •a delivered. •b ½" O.D. •c ⅝" O.D. •d per st. •e 34" x 60" sheet. •f per 100 ft. •g 5 tons & up: cold roll, anneal & pickled 2B finish. •h Incl. Federal tax. •i add 25¢ for pint of additive. •j 1100 & 3003 alloy, mill finish. •k bag of 3 cu ft. •l treated with air entraining agent. •m 2-10M ft. •n fob mill fr equalized with nearest stocking competitor. •o 250 sacks or more. •p 100 sq ft. •r per lb. •s 30 lb bag. •t 36" x 108";-10.81 lb/sh; 48" x 144"; 21.7 lb/sh. •u 19.31 lb/sh. •v fob plant. •w 48 x 144" •x 0.11"th. •y 27 gauge. •aa 16M lb & up. •bb Per 50 lb bag. •dd add $1.00 cwt boxing. •ee 4 tons & up. •gg add $2/cwt boxing; $0.75/cwt on skids. •hh Theoretical wt for 48" x 96"; 60.4-lb per sh. •ii 300-bag lots. •jj 100-lb bag. •mm Theoretical wt; 19.7-lb per sh. •nn 2% cash. •oo skid packed. •pp type 304. •qq Philadelphia and suburbs. •rr less 2% disc. 15 days. •ss less 2% disc. 10 days. •tt less 2% disc. 10th. •uu add 2% sales tax. •vv Type N. •xx less ½% disc. 10 days. •yy .021 ga. •zz .061" th. •A Per 100 lb. •C 15M lb. •D less ½% for cash. •E Quantity differential. •F less 5% disc. 10th. •G less ½% disc. 10th. •H Fed. tax exempt. •K less ½%, 10 days. •L 5% disc. 30 days. •M 3003: .452 for 1100. •N less 2%, 15th mo. •O less $2, cash & carry. •P less 2%, 15 days. •Q per ton. •R revised. •S add .10/bag under 200 bags. •T 5000# quantity on 4000# skids. •U 30 Msf quantity; $0.245 in 10 Msf quantity. •X per sq ft. •Y per sheet. •Z 6,000 lb or over. •AA 30,000 sf or over.

PROJECT: Four Mile Sewage Treatment Plant, Mt. Washington, Hamilton County, Ohio. COUNTY SANITARY ENGINEER: George M. Lemmel. CONSULTING ENGINEER: Alfred LeFeber & Associates, Cincinnati, Ohio. CONTRACTOR: H. and F. Hosea Co., Cincinnati, Ohio. PIPE: 18" Extra Strength Plain Concrete Pipe with O-Ring Rubber Gaskets.

U. S. Concrete Pipe with O-Ring joints provides FAST...TIGHT...PERMANENT sewerage systems!



U. S. Concrete Pipe . . . a custom concrete blend formulated to resist the corrosion attack of most acids, alkalies and industrial wastes. Engineered and manufactured for permanence.

O-Ring Joints . . . designed to permit faster installation yet seal *tight* to eliminate infiltration and exfiltration.

Get the most out of your construction dollar . . . specify U. S. Concrete Pipe with O-Ring Joints for your next waste disposal system. You may obtain complete details by contacting United States Concrete Pipe Company in the cities listed below.

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CIRCLE 73 ON READER SERVICE CARD

Labor and Materials Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES.

- Cement Aggregate, Ready Mixed Cement Asphalt: Last, Dec. 7; Next, Jan. 4.
- Iron & Steel Products, Pipe: Last, Dec. 14: Next, Jan. 11.

HOURLY WAGE RATES—Base rate + fringe benefits

Classification	Atlanta $ + ¢	Baltimore $ + ¢	Birmingham $ + ¢	Boston $ + ¢	Chicago $ + ¢	Cincinnati $ + ¢	Cleveland $ + ¢	Dallas $ + ¢	Denver $ + ¢	Detroit $ + ¢	Kansas City $ + ¢
COMMON LABOR											
Building	2.00	2.30+7½	2.10	2.90+10	3.225+7½	3.025	3.52	1.95	2.47	3.00+34	2.705
Heavy Const.	2.00	2.30+7½	2.10	2.75+10	3.225+7½	2.90	3.435	1.95	2.42	3.00+34	2.755
SKILLED BUILDING TRADES											
Bricklayers	4.05	4.10+15	4.15	4.20+30	4.40+10	4.125+14	4.085+25	4.15	4.15	4.09+34	4.20
Carpenters	3.45	3.725+7½	3.40	3.85+10	4.08+20	3.95	4.11+15	3.55	3.80c	3.75+47	3.75
Struct. Iron Workers	3.70+7½	4.10+20	3.77+13	4.26+20	4.55+16	4.025+105	4.16+10	3.675+8	3.91+10	4.10+27½	3.90
Plasterers	3.50+3	3.85+10	3.47	4.00+45	4.17+27	3.925+1	4.16+10	3.937+10	3.975+05	3.87+41	4.00
Electrical Workers	4.15+5	3.85+10	3.925	4.30+295	4.50	4.29+52	4.29	3.775+7½	4.20	4.11+52	4.30+20
Steamfitters	4.00+25	3.96+18	3.85+22	4.15+29	4.25+25	4.15+215	4.06+20	3.825+11	4.10+12	3.90+51	4.00+295
EQUIPMENT OPERATORS											
Hoisting Engineers	3.88	4.10+20	3.45	4.15+35	4.05+05	3.95A+06	4.26	3.70	3.40	3.74+39½	3.72
Tractor Operators (B)											
34-49 hp	3.25	3.70+20	3.45	3.575+35	3.80+5	3.675+10	4.01	2.625	2.65	3.74+39½	3.025
70-100 hp	3.25	3.70+20	3.45	3.575+35	3.95+5	3.675+10	4.01	2.625	3.25	3.74+39½	3.475
Over 100 hp	3.25	3.70+20	3.45	3.575+35	3.85+5	3.675+10	4.01	2.625	3.25	3.74+39½	3.475
Tractor Scraper, 15-16 cy	3.25	3.70+20	3.45	3.575+35	3.85+25	3.675+10	4.01	2.625	3.25	3.74+39½	3.475
Power cranes & shovels											
½ cy	3.78	4.10+20	3.45	4.00+35	4.40+5	3.675+10	4.16	3,425	3.40	3.74+39½	3.72
¾ cy	3.78	4.10+20	3.45	4.00+35	4.40+5	3.90+10	4.16	3.425	3.40	3.74+39½	3.72
Motor grader operator	3.25	3.25+20	3.45	4.00+35	3.85+5	3.90+10	4.01	2.625	3.25	3.74+39½	3.72
Air Comp. operator	3.60	3.30+20	3.45	3.55+35	3.70+5	3.90+10	3.91	2.10	3.25	3.74+39½	3.475
Air tool operator	2.22	2.325+7½C	2.25	2.80+10	4.00+5	3.90+10	3.885	2.10	2.75	3.13+34	2.80
TRUCK DRIVERS											
1½ Ton	2.10	2.27+075	2.10	2.85+23	2.68+21	2.70+11	3.07+15	2.625	2.70	3.11+18	2.68
Under 4 cy	2.20	2.27+075	2.30	2.85+23	2.68+21	2.75+11	3.07+15	2.625	2.85	3.11+18	2.68
Over 4 cy	2.50	2.27+075	2.70	2.85+23	2.68+21	2.80+11	3.07+15	2.625	3.05	3.11+18	2.755

Classification	Los Angeles $ + ¢	Minneapolis $ + ¢	New Orleans $ + ¢	New York $ + ¢	Philadelphia $ + ¢	Pittsburgh $ + ¢	St. Louis $ + ¢	San Francisco $ + ¢	Seattle $ + ¢	Montreal $ + ¢	Toronto $ + ¢
COMMON LABOR											
Building	3.26+10	3.00	2.05	3.65+292	2.70+15	2.90+225	3.125+10	3.225+10	3.00+25	1.82+4	2.05+8
Heavy Const.	3.26+10	2.98	2.00	3.65+292	2.70+15	2.715+20	3.125+10	3.225+10	3.00+25	1.82+4	2.05+8
SKILLED BUILDING TRADES											
Bricklayers	4.35+25	4.025+15	3.82+7½	5.20+62	4.40+17	4.65+225	4.25+33	4.40+42½	4.30+30	2.65+6	3.30+13
Carpenters	4.00+20	3.68+15	3.40+075	4.75+38	4.00+20	4.275+24	4.075+104	3.95+36	3.53+20	2.45+5	3.05+12
Struct. Iron Workers	4.50+3.55	3.77+15	3.70+10	5.05+706	4.60+23	4.45+29	4.075+104	4.50+35	3.92+10	2.65+6	3.15+12
Plasterers	4.25+55	3.80+33	3.42+5	4.95+67	4.30+20A	4.395+22	4.10+7½	4.29+63	3.87+32	2.65+6	3.20+21
Electrical Workers	4.90+49	3.85+44	4.00+7½	4.40+26	4.675+18	4.60+34½	4.26+52	4.38+37	4.025+26	2.60+5	3.60+19
Steamfitters	4.58+68	3.77+38	3.90+7½	4.80+772	4.35+32	4.15+20	4.425+25½	4.57+76	4.14+29	2.72+6	3.51+20
EQUIPMENT OPERATORS											
Hoisting Engineers	4.01+25	3.75	3.525+7½	4.90+39	4.50/4.205 +275A	3.73+20	4.175	4.00+35	3.94+20	2.45+5C	3.25+13
Tractor Operators (B)											
34-49 hp	4.31+25	3.36	3.525+7½	4.375+35	3.78+275	3.82+20	4.175	4.23+35	3.91+30	2.05+4C	2.50+10
70-100 hp	4.31+25	3.60	3.525+7½	4.375+35	4.03+275	3.82+20	4.175	4.23+35	3.91+30	2.28+5	2.60+10
Over 100 hp	4.31+25	....	3.525+7½	4.375+35	4.03+275	3.82+20	4.175	4.23+35	3.91+30	2.28+5	2.60+10
Tractor Scraper, 15-16 cy	4.41+25	3.60	3.525+7½	4.50+36	4.03+275	3.82+20C	4.175	4.36+35	3.91+30	2.28+5	2.60+10
Power cranes & shovels											
½ cy	4.41+25	3.82	3.525+7½	5.25+420	4.50+275	4.02+20	4.175	4.67+35	4.28+30	2.55+5	3.10+12
¾ cy	4.41+25	4.08	3.525+7½	5.25+420	4.50+275	4.02+20	4.175	4.67+35	4.28+30	2.55+5	3.25+13
Motor grader operator	4.41+25	3.36	3.525+7½	4.50	3.93+275	4.02+20	4.175	4.44+35	4.00+30	2.28+5	2.90+11
Air Comp. operator	3.53+25	3.25	2.78+7½	4.50+35	3.63+275	3.53+20	3.625	3.67+35	3.64+30	2.15+5	2.60+10
Air tool operator	3.47+10	3.30	2.105	4.10+492	2.70+10	2.875+20	3.625	3.655+10	3.35+10	2.15+5	2.60+10
TRUCK DRIVERS											
1½ Ton	3.575+10	2.98	3.525+7½	3.275+28	2.82+18	2.75+20C	3.05+15	3.38+21	3.50+30	1.85+4	2.15+15
Under 4 cy	3.575+10	2.98	3.525+7½	3.275+28	2.82+18	2.735+30	3.25+15	3.253+21	3.50+30	1.85+4	2.15+15
Over 4 cy	3.765+10	3.13	3.525+7½	3.275+28	2.82+18	2.835+20	3.35+15	3.413+21	3.70+30	1.85+4	2.15+15

ENR Skilled Labor Average (Bricklayers, Carpenters, Iron Workers): $4.246, ENR Common Labor Average $2.871 Description of fringe benefits last appeared Sept. 21 1961. •A 2 drum. •B Including Buildozers

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City
GYPSUM BOARD & LATH											
Plaster board, ½"	$62.50F	$54.00	$63.00H	$61.00mH	$67.50	$53.50wH	$64.00CF	$57.50	$64.50H	$66.00K	$72.00H
" " ⅜"	52.50F	47.50	52.00H	51.00mH	54.50	43.85wH	57.50CF	47.50	54.00H	56.00K	62.00H
Board lath, ⅜"	42.50F	35.75	47.77H	36.00mH	45.00	33.05wH	40.00CF	43.50	42.00H	42.45K	45.00H
SHEATHING											
Gypsum T & G, ½"	62.50F	55.70	75.00H	56.00mH	62.50	51.16wH	53.75CF	57.50	66.75H	66.00K	......
Fiber board, ½", sq. e	72.00F	65.00	67.50H	65.00H	87.00	65.00wH	84.50CF	68.75	62.50H	57.00DK	75.00H
" " 25/32", T & G	......	108.50	140.50H	120.00H	123.00	125.00wH	131.00CF	118.00	107.50H	89.18DK	122.00H
INSULATION											
Fiber board, sq. e., ½"	75.00F	69.00	83.50H	79.00hnH	87.00	72.50wH	88.00CF	68.75	75.00	62.50DK	80.00H
Min. wool, loose	1.08z	1.40F	1.40	1.70bH	1.85	1.45wH	1.35	1.50	1.55b	1.30b	1.40H
" " 3" batts	67.80F	67.50	70.00	75.00H	80.00	60.00wH	70H	65.00	65.00ub	52.00	75.00H
Glass fiber, loose	1.45	1.60F	2.00	......		1.45wH	......	1.50	2.00b	1.85b	1.80H
" " 3" batts	48.00F	47.00F	65.00	75.00H	63/65	60.00wH	60.00	65.00	65.00a	80.00	75.00H
Aluminum foil, 1 side	3.62qi	4.00F	3.77gG	5.30xHS	5.25	3.02jwJ	14.00ioJ	5.00gAG	5.25	......	3.60d
" " 2 layers	......	33.50F	......	53.50qH		66.00wJ	55.00J	45.00	48.65	......	60.00

	Los Angeles Q	Minneapolis F	New Orleans	New York	Philadelphia H	Pittsburgh	St. Louis HO	San Francisco	Seattle	Montreal	Toronto
GYPSUM BOARD & LATH											
Plaster board, ½"	$67.00F	$68.00	$57.00H	$70.00H	$53.50	$74.00K	$56.50/67.50	$60.00	$74.25K	$58.00M	$58.00
" " ⅜"	60.50F	58.00	48.00H	56.00H	45.50	65.00K	51-56HO	49.00F	62.00K	50.00M	52.00
Board lath, ⅜"	0.34F	0.41xL	40.00H	44.50H	37.50	40.00K	40.00HO	0.36xF	54.00K	39/42.00M	41.00L
SHEATHING											
Gypsum T & G, ½"	64.50F	67.00	57.00H	60.00H	52.00	63.00K	67.00HO	61.00F	73.00K	54.00M	70.00
Fiber board, ½", sq. e	75.00F	100.00	67.00H	78.00	64.00	60.00K	65-75HO	70.00F	68.50K	63.00M	58.50T
" " 25/32", T & G	125.00F	135.00	140.00H	124.00	110.00	100.00K	115/120	111.00F	68.50K	......	.....
INSULATION											
Fiber board, sq. e., ½"	80.00F	81.00	80.00H	78.00	67.00	60.00K	75/80	69.00F	71.00K	73.00M	68.00T
Min. wool, loose	76.00BeF	1.75y	2.25L	1.55b	1.10	1.25sK	125/135	1.75F	1.25tK	1.35M	1.85
" " 3" batts	83.00F	70.00	70.00*	68.50k	47.00	55.00K	60/70	66.50F	58.00K	60.00M	61.00
Glass fiber, loose	1.35s	1.75	.....	.....	1.10	1.25sk	2.00P	1.75F	1.85*pK	1.35M	.....
" " 3" batts	64.00	70.00	.....	68.50	47.00	55.00K	68.50	66.50F	50.25*lKh	60.00M	61.00
Aluminum foil, 1 side	4.20g	3.50	6.50	4.38iH	2.90	4.25igK	4.39ig	5.10	6.50K	9.00qM	15.50o
" " 2 layers	7.50V	......	......	40.00cH	83.50	38.50K	....	60.00F	45.00EK	56.00M	46.00

•* F.o.b. warehouse. •a Semi thick. •b 30# bag. •c 3 layers of foil: $54.50. •d 40# kraft paper, 5 Msf, 100/500 rolls. •e 20# sq ft bag, 4" thick. •f Full trailer loads. •g 80# kraft paper backing 400 rolls or over. •h LCL. •i 40#. •j 80#. •k 2-in. •l 2". •m 8 to 10 ton quantities. •n Distributor's siding. •o Per Msf roll. •p 32# bag. •q 500 sf. •s 35# bag. •t 26# bag. •u Flame proof $75. •v 5000 sf quantity. •w F.o.b. city. •x Sq. yd. •y 30# bag. •z Spun rock wool. •A 650 sf. •B ton •C F.o.b. plant, freight allowed.

•D CL. •E 10 Msf. •F Less 2% disc, 10th. •G ½ of 1%, 10 days. •H 2% disc, 10 days. •J 1% disc, 10 days. •K Less 2% for cash. •L 5% disc, 10th mo. •M fed. tax incl. •N 1% disc, 10 days. •O add 2% sales tax. •P 50 lb. bags. •Q add 4% sales tax •R revised. •S 45 lb. •T less 2%, 30 days. •U lots of 2606 sq. ft. •V 250 sf roll.

MEXICO CITY WAGES AND PRICES, DECEMBER, 1961

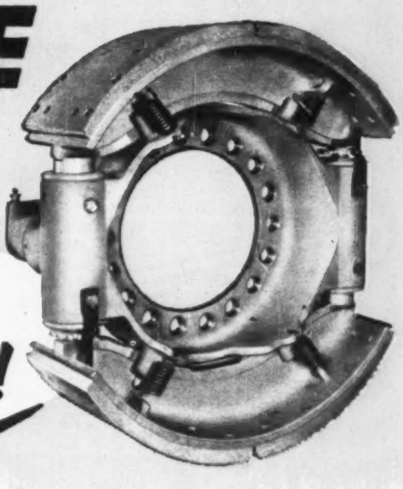
WAGES, av per week, 8 hr day (pesos) 6 days work-extra day's pay

Common labor,	building (peons)	101.50
	heavy const (peons)	136.50
Skilled labor;	carpenters 1 cl	210.00
	bricklayers 1 cl	245.00
	struct, ironworkers	315.00

MATERIAL PRICES, F.o.b. City (pesos)

Struct. steel shapes, fob Monterrey		
I-beams, 3 x 3 x 4"	per metric ton	1980.10
Reinf. steel, corrugated rods, per ton		
⅜"-½" x 11 meters consolidada		1875-1950
¾"-1" x 11 meters		1750.00
Gravel, truckload, per cu meter		
Blue gravel		30.00
Cement, std. port. (Tolteca)	per metric ton	260.00
Lumber, 2" x 4" 1st class pine 20 ft.	per M sq. ft.	3000.00
2" x 4" 2nd class pine	per M sq. ft.	2300.00

It's here! New HEAVY-DUTY STOPMASTER BRAKE



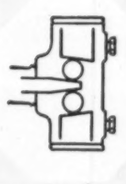
Biggest News in Brakes for Off-Highway Equipment in over 30 years!

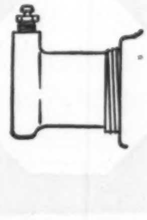
To meet the growing need for more versatile, more compact, more dependable braking equipment in off-highway operations, Rockwell-Standard® now presents a completely new concept in brake design.

This new brake is specifically engineered for use on scrapers, prime movers, earth and rock wagons, dump trucks and similar construction vehicles. Available in 17, 20¼, 22 and 26-inch diameters and in 4 to 10-inch widths.

If it's a Stopmaster you get . . .

- **Reduced Operating Cost**
- **Less Heat Fade**
- **Greater interchangeability of parts**
- **Heavy Duty ¾ inch tapered Econoliners®**
- **Adjustment frequency reduced**
- **Rugged Design**
- **Extended Drum Life**





Only the Heavy-Duty Stopmaster offers:

"BALANCED DESIGN" AND NEW ACTUATION PRINCIPLE

Results in improved braking performance and lower operating temperatures. In Dual-Actuation design, both shoes do an equal amount of work. Balanced shoe-action assures more dependable service; faster, surer stops.

HYDRAULICALLY OPERATED

New hydraulic cylinders offer more compact design and increased mounting flexibility for better protection. External cylinders, located outside of drum, eliminate heat damage and overheating of fluid. For air-over-hydraulic systems, air volume requirements are considerably less. Actuation time is reduced, with faster response of hydraulic system. The Stopmaster Brake is well suited for straight hydraulic, air-over-hydraulic, or vacuum-over-hydraulic operation.

Another Product of... **ROCKWELL-STANDARD CORPORATION**

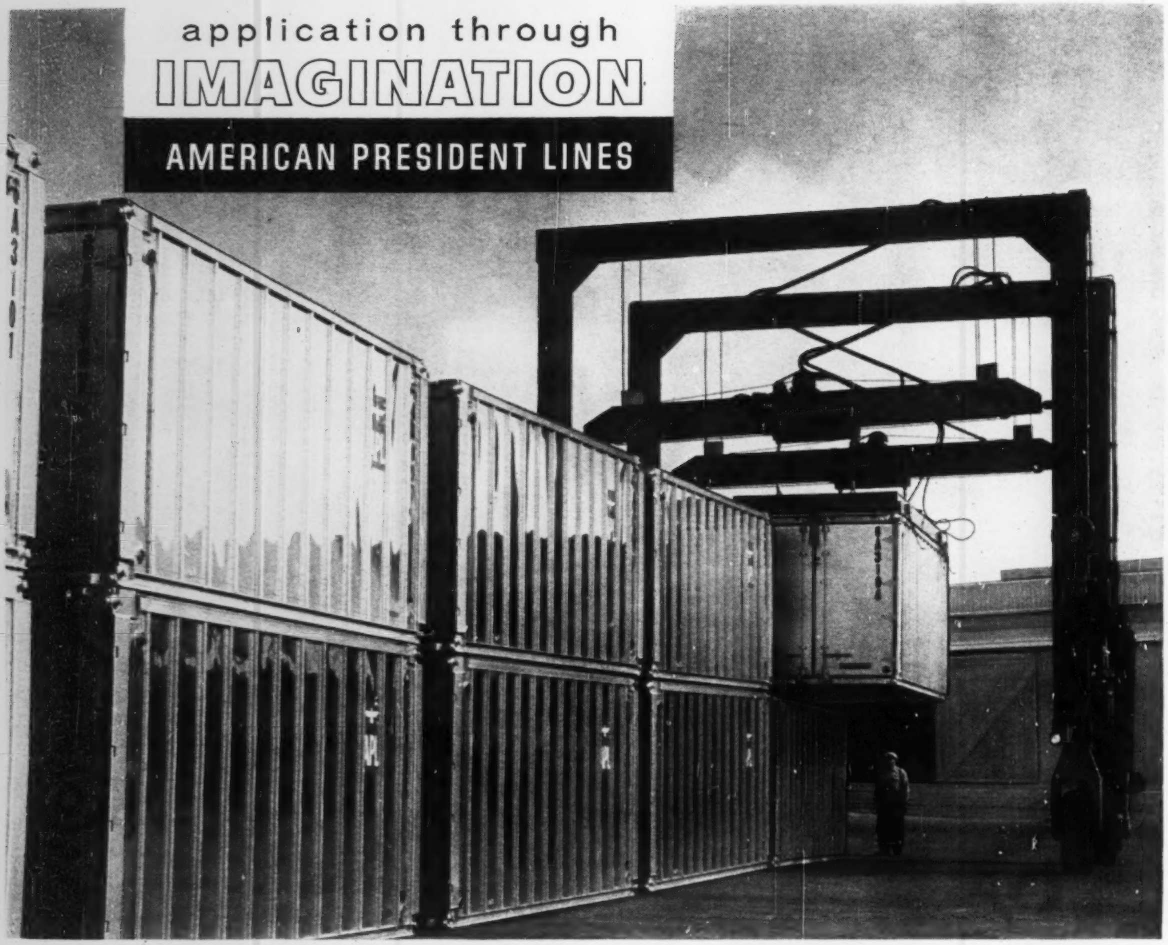
Brake Division, Ashtabula, Ohio

CIRCLE 75 ON READER SERVICE CARD

application through

IMAGINATION

AMERICAN PRESIDENT LINES



Travelift by Drott stacks a container every 2½ minutes for "President Tyler"

The President Tyler, second in APL's new containerized cargo ships, recently chose as its land-based partner . . . Travelift by Drott. Travelift's demanding job is to "work the yard" handling APL's new 8′x8′x20′ Cargo Van containers.

With hydraulically operated steering, traversing and hoisting, this swift moving giant transfers a container every 2½ minutes with maximum efficiency and minimum downtime . . . a dependable partner in American President Line's progress.

To find out how Travelift can solve your materials handling problems, write today for details. You'll be surprised at its versatility and its price . . . for most models less than $1000 per ton of lifting capacity. Models from 7 to 50 ton capacity.

CLIP AND MAIL TO:

TRAVELIFT, A Division of Drott Mfg., Corp.
Wausau, Wisconsin
ENR-12-21-61

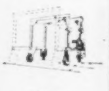
Gentlemen, please RUSH full information on Travelift.

Name ....

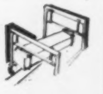
Company Name ....

Address ....

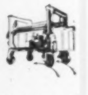
City ....Zone.....State............



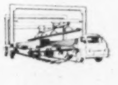
Adjustable wheel base.



Traverses straddle area.



Hydraulic drive and steering.



Adaptable to many attachments.

Travelift BY DROTT

A DIVISION OF THE DROTT MFG. CORP., WAUSAU, WISCONSIN

Labor: Costs Will Go Higher in 1962

Wages are primed for some substantial increases next year.

Unions in 19 of ENR's 20 U. S. cities will receive automatic wage increases in 1962, provided for by existing long-term labor agreements. In addition, new contracts for most of the key trades will be negotiated next year. No hold-the-line signs are in sight. The impact of these increases will not be felt until late 1962, however, since the balance of contracts ready to expire will be in the second half of the year.

There seems little chance that President Kennedy's appeal for voluntary wage restraints to reduce chances of further inflation will carry much weight with organized labor. Labor holds the opinion that higher wages are essential to economic expansion.

The increase should be slightly lower than last year's boost, however, since fewer contracts expire in 1962 than did in 1961. The average of deferred and newly negotiated construction wage increases will probably be close to 11.5¢ for laborers and 14¢ an hour for the three skilled trades included in ENR's Building Cost Index—bricklayers, carpenters, and structural ironworkers.

Equipment operators will receive a number of the deferred and newly negotiated wage hikes. The 20-cities average of equipment operators' rates will probably increase to $4.093 by next December, a boost of 4.8% over '61.

Automatic Wage Hikes for 1962

Deferred wage increases shown for key trades in 20 cities, including fringe benefit increases. Wage hikes will be negotiated for other unions whose contracts expire (C.E.) on dates shown.

	Common Labor		Skilled Labor			Equipment Operators		
	Building	Heavy Construction	Bricklayers	Carpenters	Structural Ironworkers	Tractor	Power Shovel	Air Compressor
Atlanta	—	1/1: **5.0¢** 7/1: **10.5¢**	1/1: **10.0¢** 7/1: **10.0¢**	1/1: **5.0¢** 10/1: **15.0¢**	1/1: **10.0¢** 6/15: **10.0¢**	1/1: **5.0¢** 7/1: **10.0¢**	1/1: **10.0¢** 7/1: **12.0¢**	—
Baltimore	Exp.4/1/62	Exp.4/1/62	Exp.4/1/62	Exp.4/1/62	Exp.3/31/62	4/1:**10.0¢**	4/1: **10.0¢**	4/1: **10.0¢**
Birmingham	5/15: **10.0¢**	5/15: **10.0¢**	Exp.9/1/61	9/1: **10.0¢**	1/1: **5.0¢**	9/1: **10.0¢**	9/1: **10.0¢**	9/1: **10.0¢**
Boston	Exp.5/31/61	Exp.4/1/62	5/1: **15.0¢**	5/1: **5.0¢**	Exp.6/30/62	—	—	—
Chicago	—	—	Exp.6/1/62	Exp.6/1/62	Exp.6/1/62	Exp.6/1/62	Exp.6/1/62	1/1: **15.0¢**
Cincinnati	6/1: **12.5¢**	6/1: **12.5¢**	6/1: **12.5¢**	1/1: **5.0¢** 6/1: **12.5¢**	4/1: **7.5¢** 6/1: **15.0¢**	1/1: **12.5¢**	1/1: **12.5¢**	1/1: **12.5¢**
Cleveland	5/1: **15.0¢**	5/1: **15.0¢**	5/1: **12.0¢**	5/1: **15.0¢**	5/1: **15.0¢**	5/1: **15.0¢**	5/1: **15.0¢**	5/1: **15.0¢**
Dallas	—	—	Exp.1/1/62	1/25: **5.0¢** Exp.7/26/62	Exp.4/10/62	†—	†—	—
Denver	Exp.4/1/62	4/1: **10.0¢** 9/1: **5.0¢**	4/1: **10.0¢**	7/1: **10.0¢**	Exp.4/1/62	3/1: **10.0¢**	3/1: **10.0¢**	3/1: **10.0¢**
Detroit	Exp.5/1/62	Exp.5/1/62	Exp.5/1/62	Exp.5/1/62	Exp.5/1/62	Exp.5/1/62	Exp.5/1/62	Exp.5/1/62
Kansas City	4/1: **13.5¢**	4/1: **12.5¢**	4/1: **12.5¢**	4/1: **12.5¢**	4/1: **12.5¢**	4/1: **15.5¢**	4/1: **14.5¢**	4/1: **15.5¢**
Los Angeles	Exp.4/30/62	Exp.4/30/62	Exp.4/30/62	Exp.4/30/62	Exp.8/16/62	Exp.5/30/62	Exp.5/30/62	Exp.5/30/62
Minneapolis	5/1: **10.0¢**	1/1:**12.0¢**	5/1: **10.0¢**	5/1: **10.0¢**	5/1: **13.0¢**	1/1: **15.0¢**	1/1: **15.0¢**	1/1: **12.0¢**
New Orleans	Exp.4/30/62	Exp.4/30/62	Exp.4/30/62	Exp.4/30/62	Exp.4/30/62	Exp.4/30/62	Exp.4/30/62	Exp.4/30/62
New York	1/1: **10.8¢** 7/1: **10.8¢**	1/1: **10.8¢** 7/1: **10.8¢**	Exp.5/31/62	1/1: **10.8¢** 7/1: **36.0¢**	1/1: **21.2¢** 7/1: **26.8¢**	1/1: **10.8¢** 7/1: **9.9¢**	1/1: **10.8¢** 7/1: **34.6¢**	1/1: **10.8¢** 7/1: **9.9¢**
Philadelphia	Exp.4/30/62	Exp.4/30/62	Exp.4/30/62	Exp.4/30/62 5/1: **18.0¢**	Exp.6/30/62	Exp.4/30/62 5/1: **17.5¢**	Exp.4/30/62 5/1: **17.5¢**	Exp.4/30/62 5/1: **17.5¢**
Pittsburgh	6/1: **10.0¢** 12/1: **7.5¢**	—	6/1: **10.0¢**	6/1: **10.0¢**	6/1: **10.0¢** 12/1: **12.5¢**	—	—	—
St. Louis	5/1: **10.0¢** 11/1: **10.0¢**	5/1: **10.0¢** 11/1: **10.0¢**	1/1: **15.0¢**	5/1: **10.0¢** 11/1: **10.0¢**	5/1: **10.0¢** 11/1: **10.0¢**	5/1: **10.0¢** 11/1: **10.0¢**	5/1: **10.0¢** 11/1: **10.0¢**	5/1: **10.0¢** 11/1: **10.0¢**
San Francisco	Exp.4/30/62	Exp.4/30/62	Exp.8/1/61	Exp.6/15/62	Exp.8/16/62	Exp.6/30/62	Exp.6/30/62	Exp.6/30/62
Seattle	Exp.12/31/61	Exp.12/31/61	Exp.6/30/62	Exp.12/31/61	Exp.4/20/62	6/1: **20.0¢**	6/1: **20.0¢**	6/1: **20.0¢**

† No contract in force

Money: Plentiful Now, But May Tighten

The flow of savings and loan funds to the West Coast, where 4½% is paid and to New England, where 4% prevails has led the Fed to relax Regulation Q which set a 3% ceiling on interest rates that commercial banks are allowed to pay on corporate time deposits and personal savings accounts. The new rate ceiling, effective January 1, is 3½% on funds left on deposit for at least six months and 4% for those held for more than a year. This could boost charges to borrowers. Mortgage money has been plentiful at rates usually between 5½% and 6% with discounting light, too, two or three points.

Facing the possibilities of higher mortgage rates, there are moves to extend the term of FHA insured mortgages from the present 30 years to 35- or 40-year amortization periods.

Municipal bond yields to maturity in November at 3.44% were down 11 points from their '61 high in August and 1 point from last December, but compare with 3.73% average for 1960.

Industrials yields averaged 4.24% in November after 4.29% in August.

Public Utility long-term bond yields were down to 4.46% in November from their high of 4.55% in September and from 4.52% last December.

Borrowing Cost Trends

Long-Term Bonds*

(Percent yield to maturity)

Year	US Treas. %	Municipal %	Industrial %	Public Utility %	Railroad %
1929	3.60	4.27	5.04	4.96	4.67
1931	3.34	4.01	4.79	4.57	4.42
1939	2.41	2.76	2.64	2.83	3.39
1945	2.34	1.67	2.50	2.59	2.75
1946	2.19	1.64	2.44	2.50	2.59
1949	2.28	2.21	2.53	2.69	2.71
1951	2.60	2.00	2.72	2.90	2.89
1957	3.47	3.60	3.80	3.99	3.94
1958	3.23	3.56	3.65	3.86	3.89
1959: Aver	**4.10**	**3.95**	**4.25**	**4.49**	**4.41**
1960: Aver	3.99	3.73	4.26	4.51	4.46
Dec	3.87	3.45	4.23	4.52	4.37
1961: Apr	3.79	3.44	4.13	4.43	4.26
May	3.72	3.38	4.15	4.44	4.31
June	3.89	3.53	4.23	4.49	4.42
July	3.90	3.53	4.26	4.51	4.49
Aug	4.01	3.55	4.29	4.53	4.55
Sep	4.00	3.54	4.26	4.55	4.59
Oct	3.98	3.46	4.25	4.48	4.50
Nov	3.99	3.44	4.24	4.46	4.47

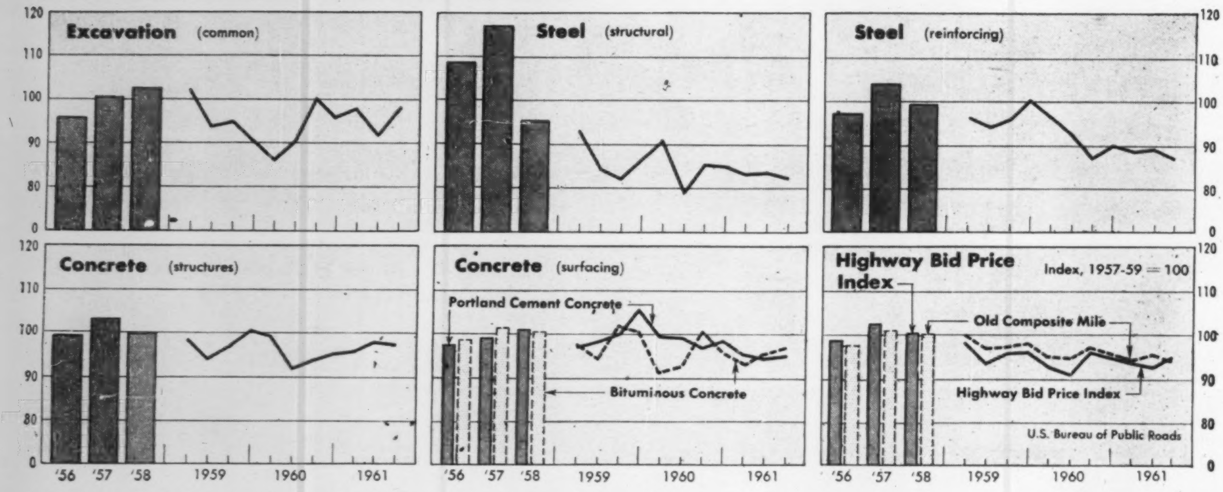
Short-Term Business Loans‡

Year	New York City %	7 Other Northern & Eastern Cities %	11 Southern & Western Cities %
1929	5.76	5.82	5.93
1931	3.82	4.26	4.90
1939	2.15	3.05	3.62
1945	2.20	2.55	2.80
1946	1.84	2.51	2.97
1949	2.35	2.86	3.17
1957	4.23	4.39	4.65
1958: Sep	4.00	4.21	4.54
Dec	4.29	4.50	4.79
1959: Mar	4.29	4.49	4.84
Jun	4.71	4.90	5.07
Sep	5.15	5.27	5.44
Dec	5.19	5.39	5.56
1960: Mar	5.18	5.34	5.57
Jun	5.19	5.34	5.58
Sep	4.74	4.96	5.32
Dec	4.77	4.97	5.33
1961: Mar	4.75	4.96	5.29
Jun	4.75	4.95	5.31
Sep	4.75	5.05	5.26

*** Standard & Poor's data: Taxable Treasury bonds (Federal Reserve Bd. series on partially tax exempt bonds shown for years 1929-39 had 1945 value of 1.66%); high grade municipal bonds; A1+grade industrial, utility and railroad bonds.**

‡ Federal Reserve Board data. New Series 1949 to date; two former series cover up to 1938 and 1939-48 and are not strictly comparable.

Costs Roundup—4th Quarter



Highway Price Indexes in Nine States and the U.S.

Reported by state highway departments — US Bureau of Public Roads Indexes, 1957-59 = 100

Base Year = 100:	California H'way 1940	California Bridge 1939–40	Colorado 1949	Idaho 1950	Michigan 1940	Nevada 1955	Oregon 1940	South Dakota² '57-'59	Texas '49-'53	Washington 1940	Excavation¹ Price (cy) $0.42†	Excavation¹ Index 100.0	Surfacing Port cmnt conc Price (sy) $4.38†	Surfacing Bit conc Price (t) $6.66†	Surfacing Combined Index 100.0	Structures Reinf steel Price (lb) $0.129†	Structures Str steel Price (lb) $0.195†	Structures Str conc Price (cy) $54.18†	Structures Combined Index 100.0	Highway Bid Price Index 100.0	Old Composite Mile 100.0	ENR Construction Cost Index 100.0
1956 Av	247.3	265	92.8	118.3	185.4	118.2	193.8	....	105.0	214.1	0.40	96.0	4.26	6.58	98.1	0.127	0.212	53.74	102.0	98.8	97.5	91.1
1957 Av	264.3	283	97.3	116.1	173.0	124.3	187.8	101.5	108.2	226.4	0.42	100.7	4.34	6.75	100.3	0.134	0.228	55.98	107.8	103.1	101.5	95.2
1958 Av	236.5	267	96.1	96.4	171.1	113.3	174.6	96.5	115.3	211.4	0.43	102.9	4.41	6.67	100.5	0.129	0.186	54.10	98.5	100.6	100.1	99.9
1959 Av	239.7	260	92.9	93.6	163.7	104.6	176.3	103.1	111.0	194.0	0.40	95.7	4.40	6.58	99.6	0.126	0.169	53.00	94.2	96.4	98.3	104.9
1960 Av	232.5	248	90.3	117.3	174.4	112.4	175.4	....	110.4	201.4	0.39	93.8	4.33	6.37	97.2	0.119	0.167	51.72	91.7	94.1	95.9	108.4
Q1.	219.8	237	88.1	103.8	170.8	101.2	167.3	....	110.9	192.8	0.37	86.9	4.36	6.11	95.5	0.125	0.178	53.98	96.6	93.0	95.5	107.0‡
Q2.	251.6	...	92.8	103.6	174.5	111.0	182.7	100.8H1	106.0	190.1	0.38	91.2	4.35	6.20	96.1	0.121	0.155	59.20	88.7	91.9	95.0	108.2‡
Q3.	229.1	257	92.3	102.7	183.8	115.6	176.4	....	114.6	210.7	0.42	100.2	4.27	6.71	99.2	0.114	0.167	50.97	90.3	96.5	97.1	109.3‡
Q4.	228.5	249	89.3	136.8	171.1	93.5	175.5	107.9H2	111.5	212.0	0.41	96.4	4.33	6.44	97.8	0.116	0.166	51.71	91.2	95.0	96.0	109.3‡
1961:																						
Q1.	229.6	259	99.7	145.3	169.3	125.9	175.2	....	116.0	242.9	0.41	98.3	4.18	6.19	94.2	0.115	0.162	52.14	90.8	94.4	94.8	109.8‡
Q2.	252.8	261	104.6	101.6	171.2	103.9	177.9	111.1H1	124.3	195.0	0.39	92.6	4.13	6.38	95.1	0.116	0.163	53.25	92.2	93.2	95.6	111.9‡
Q3.	230.5	269	89.4	104.8	167.6	110.7	186.7	....	122.8	219.4	0.41	98.1	4.16	6.47	96.2	0.113	0.161	52.96	91.1	95.1	94.6	112.4‡

•¹ Common excavation plus other expressed as equivalent common excav. •² Changed from 1940 = 100 base. •† Prices for base year index. •‡ Last month of quarter. Based on 1957–59 = 100.

Highway Bid Prices Inch Upward

Third quarter bidding for new highway construction pushed prices higher in several states and nudged the Bureau of Public Roads new Highway Bid Price Index (based on 1957-59 as 100) to 95.1, 2% higher than the second quarter's value.

This 2% boost follows a 1.3% decline in the second quarter and a 0.3% increase in the first quarter of '61. The index still stands well below the all time high yearly average of 103.1, which it hit in 1957, but smaller fluctuations in '60 and '61 may indicate a trend towards stabilization of prices.

Six out of the ten state highway bid price indexes shown moved up in the third quarter of '61. California's bridge index and Idaho's highway index both are up 3.1%, Nevada increased 6.5%, Oregon 4.9%, and Washington went up 12.5% over the second quarter. South Dakota's semi-annual index, at 111.1 for the first half of '61 stands 3.0% above last year's second half.

On the down side, Texas dropped off 1.2% in the third quarter; Michigan slipped 2.1%; Colorado dropped 14.5%; and California's Highway index showed bid prices moved down 8.8% from the second quarter.

The New Highway Bid Price Index

Because of changes that have occurred in highway construction in the decades since the composite mile index was first developed, certain deficiencies in the index have come to light in recent years. These deficiencies include: the remoteness of the 1925-29 base period quantities that are no longer representative of present federal-aid highway work; the change of geographic distribution of the work since the old base period; and the calculation of the composite mile index without direct consideration of the costs of bituminous pavements.

To counteract these problems, the original fixed-base index was redesigned. The new index employs the 3-year period 1957-59 as a base.

The method of computing the new index is similar to the old base, except that surfacing is now represented by two indicator items, portland cement concrete and bituminous concrete. In addition, nationwide total quantities will now be used for the base period instead of the old per mile quantities.

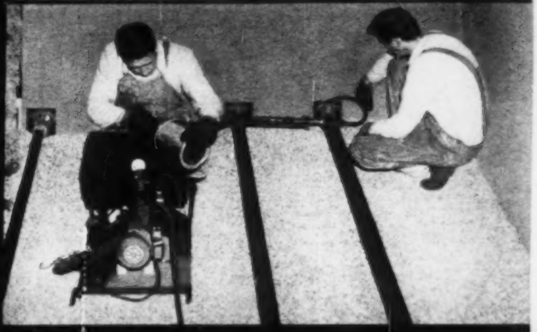
The values and weights in the new highway bid price index are:

Item	Unit	Quantity (thousand)	Unit Price	Value Dollars (thousand)	Weight %
Excavation	cu yd	3,641,885	$0.42	$1,529,592	33.8
Surfacing					
Portland cement concrete	sq yd	154,953	4.38	678,221	15.0
Bituminous concrete	ton	111,516	6.66	742,472	16.4
Subtotal, surfaces		......	....	1,420,693	31.4
Structures:					
Reinforcing steel	lb	2,206,879	0.129	285,139	6.3
Structural steel	lb	2,581,462	0.195	502,294	11.1
Structural concrete	cu yd	14,583	54.18	790,027	17.4
Subtotal structures		....	....	1,577,460	34.8
TOTAL		....	....	4,527,745	100.0

The new index is still a fixed-base index, providing a means for determining what it would cost to contract for the base period quantities at the current prices of any particular period.

Specially Formulated for one of the most remarkable bridges ever constructed

ALLIED
JET SEAL 9015-J
chosen for the $27 million HOOD CANAL BRIDGE



Using the specially designed Allied-Stroud Applicator Model 1691-J, workman apply Allied Jet Seal 9015-J inside one of the giant pontoons of the Hood Canal Bridge.

Allied Jet Seal, Product 9015-J—the superior polysulfide, polymer, elastomeric sealant—was developed especially for sealing work on the new Hood Canal floating bridge near Seattle, Washington.

The floating portion of Hood Canal Bridge spans 6,470 feet of the bridge's total 7,866 foot length, and is composed of 23 concrete pontoons—most of them 360 feet long and weighing over ten million pounds each. These pontoons carry a Washington State highway twenty feet above the water.

Some 159,000 feet of 2½-inch stressed steel cables pass through bulkheads and endwalls in the underwater portions of the bridge. These cables are sealed to the giant pontoons with more than 4,000 gallons of Allied Jet Seal 9015-J.

Jet Seal 9015-J was selected for its complete and positive adhesion after immersion in water for long periods of time, and for its ability to meet high expansion and contraction factors.

Howard, Needles, Tammen and Bergendoff supervised construction for the Washington State Toll Bridge Authority. General contractor: Yuba Erectors Division of Yuba Consolidated Industries, Inc. Charles R. Watts Company, Seattle, was sealing contractor for the project.

For more information about Allied Jet Seal 9015-J and the complete Jet Seal story, write:

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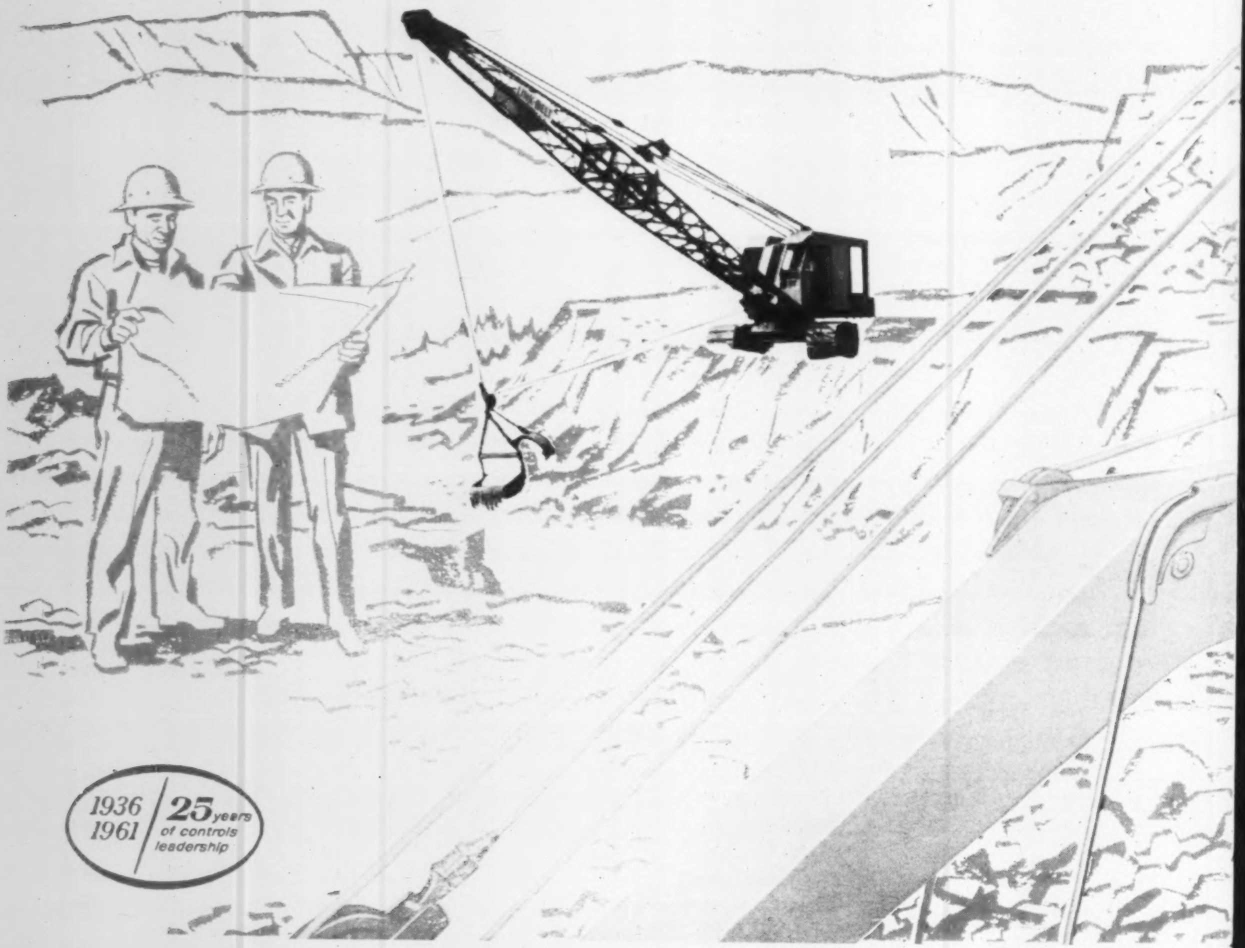
CIRCLE 79 ON READER SERVICE CARD

X-RAY VIEW REVEALS

10 LINK-BELT design features that reduce your downtime…cut your costs



1936
1961
25 years of controls leadership

① **Full-Function Design practically doubles upper machinery life.** Separate shafts… separate gears… separate clutches transmit power for *each* machine function. Only the components in actual use are under load… other shafts and clutches remain motionless while gears run free on antifriction bearings. Full-Function Design has been proved in the field year after year to be superior to conventional design.

② **Speed-o-Matic power-hydraulic controls reduce downtime!** In addition to eliminating up to 150 mechanical parts, the Speed-o-Matic system is unaffected by normal changes in climate or temperature. Only a seasonal oil change is required… no need to prime or bleed the system.

③ **Speed-o-Matic clutches require little operator attention!** Hydraulic cylinder pistons automatically compensate for normal lining wear, heat expansion or weather changes. Minor adjustments may be weeks, even months apart.

④ **Clutches are interchangeable** on a given machine (including components of each) for reduced parts inventory. Located *outside* the side housings, clutches are readily accessible… can be easily pulled.

⑤ **Extremely short drum shafts minimize bending and flex!** Tandem drum arrangement allows closer spacing of the side housings and the side housing bearings, resulting in more rigid supports.

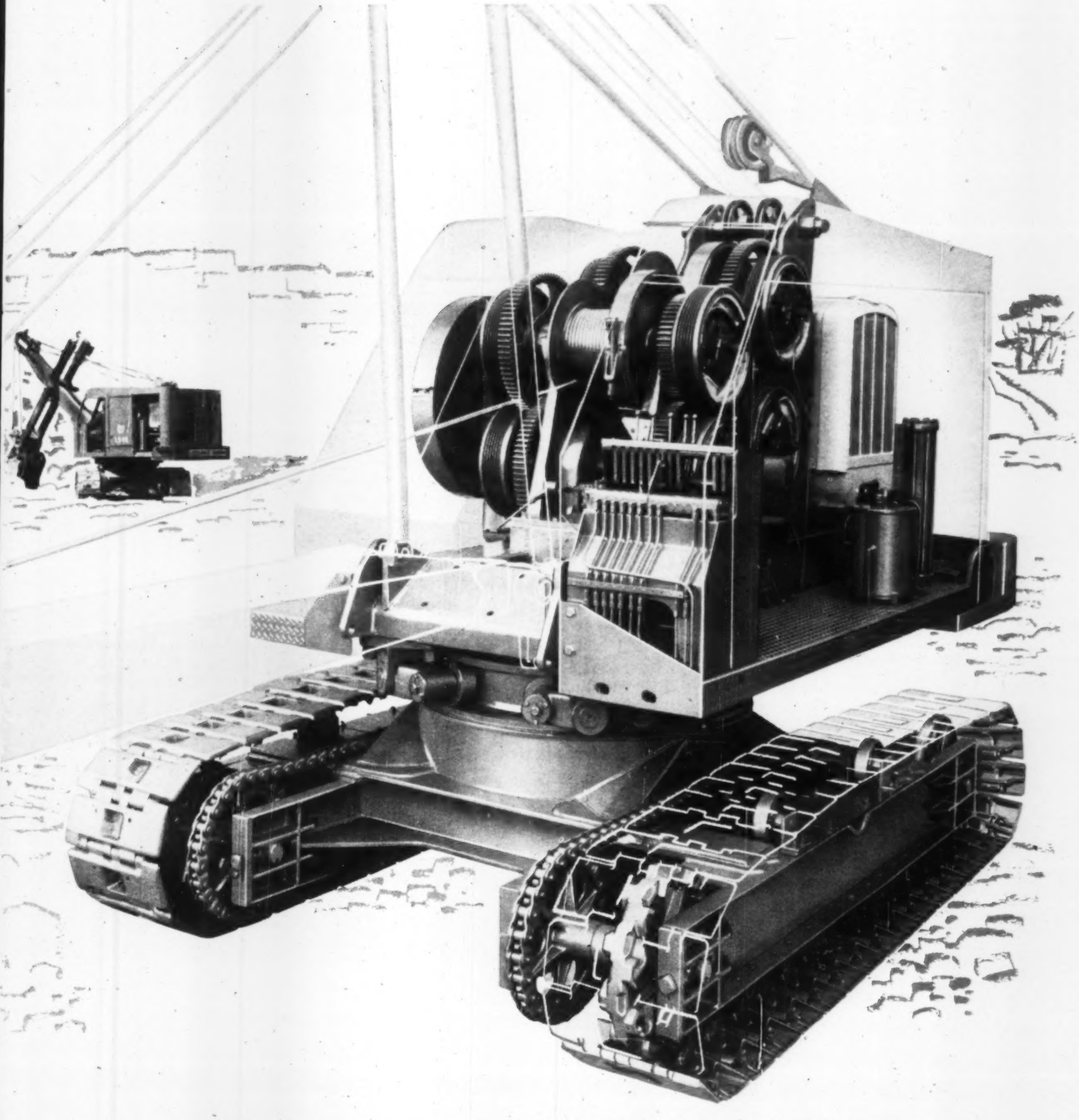
⑥ **Fast, simple removal of any operating shaft!** Brake drums, clutch spiders and bevel gears are involute-splined to the shafts… no press fits or keyways used.

⑦ **No heat transfer between clutch drums and brake drums!** Clutch drums are separated from gears and brake drums to minimize clutch and brake wear.

⑧ **Long-life mechanical drum brakes are easier to operate and service!** Unlike brakes on some shovel-cranes, all moving parts are mounted on antifriction bearings to reduce wear.

⑨ **Lower machinery fully protected against dirt and other foreign material!** Hydraulic power steering and automatic brakes are completely enclosed in a clean, flat carbody.

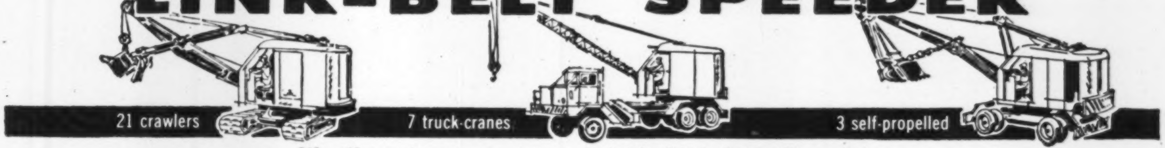
⑩ **Adjustable, conical hook rollers** follow a true circular path… no scuffing or peening. Double flange turntable eliminates center pivot up-pull or wear-causing bind or stress.



NOTE: The entire upper machinery of the Full-Function Design models (8- to 40 ton capacity) can be field-stripped, piece by piece, without removing major portions of the cab. For fully-illustrated, descriptive literature on the various models in the Link-Belt Speeder line, see your distributor. Or write: Link-Belt Speeder Corporation, Cedar Rapids, Iowa.

117-61N

LINK-BELT SPEEDER



It's time to compare . . . with Link-Belt Speeder

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for light-load excavations

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The big "plus" is safety with savings! Foster Lightweight Piling is the strongest made; yet because it's so easy to handle, it reduces your job costs.

Foster Lightweight Piling needs no special rig, can be driven by light hammers, and used over and over again. It pulls easily and leaves little void.

One more "plus": You can rent your piling from Foster and avoid the usual capital tie-up.

For all types of steel piling, for highway and construction products, call the Foster Specialist near you.

Write **L. B. FOSTER CO.** for Lightweight Piling Catalog EP-12A.
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New York 7, Los Angeles 5,
Atlanta 8, Cleveland 35.

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Building Cost Trends by Type—1913=100

	Weighted Cost Indexes						Contractor Price Indexes						
	General Construction		Industrial		Comm'l & Factory	General Building		Industrial				Gen.	Composite Cost
Yr. & Month	ENR Constr. Cost	Assoc. Gen. Contr.	American Appraisal Co.	Marshall & Stevens	E. H. Boeckh cf	ENR Bldg. Cost	Smith Hinchman & Grylls ag	Aberthaw be	Austin g	Fruin. Colnon	Turner	Fuller h	U. S. Dept. Comm. d
1913	100	100	100	100	100	100			100	100	100	100	
1926	208	197	217	185	181	185	185	197	185	218	195	202	179
1932	157	171	155	130	144	141	128	168	117	178	136	157	140
1939	236	188	200	183	191	197	199	190	152	208	182	195	180
1945	308	231	271	248	252	239	285	236	234	247	258	241	235
1946	346	257	322	288	275	262	319	279	273	285	318	290	269
1949	477	342	490	365	369	352	395	312	307	382	413	382	363
1955	660	439	608	479	465	469	522	398	366	483	498	462	440
1956	692	462	635	503	489	491	544	427	400	503	544	482	465
1957	724	483	663	515	507	509	568	453	420	512	576	504	482
1958	759	499	682	528	517	525	565	453	427	530	576	526	486
1959	797	517	704	544	535	548	575	473	429	551	587	545	505
1960	**824**	**534**	**722**	**554**	**544**	**559**	**583**	**486**	**431**	**571**	**589**	**559**	**514**
1961 Av.													
Jan	834	539	732		543	563	570			577	589	568	511
Feb	834	538	733		543	563	569			577			514
Mar	834	538	733	554	543	563	568		431	580			514
Apr	838	538	735		544	565	564			580	589	570	518
May	847	542	737		548	569	568			583			521
Jun	850	547	740	557	550	570	570	494	433	583			518
Jul	854	547	742		551	572	574			583	598	580	521
Aug	854	547	746		552	571	577			586			518
Sep	854	547	747	558	553	571	581		433	586			
Oct	854	547	748		552	571	583			586	598		
Nov	855	547			552	571	585			586			
Dec	855					570		507*p*					

•a Incl adjustment for estimated changes in productivity •b 1914=100 •c Incl contractor overhead, profit and adjustment for estimated changes in productivity •d 1915=100 •e Semi-annual since Sep. '56 •f Computed on 1926-29 base •g Computed on 1926 base •h Computed on 1939 base •p Preliminary

Contractor price indexes for building were stable for the most part, but few are available that reflect fourth quarter experience. The 1.8% rise in cost from November to November (1.4% from December to December) of labor and materials, as measured by the Engineering News-Record Building Cost Index, was met by contractors like this: Turner Construction Co.'s building "price" index is unchanged, through October; The Austin Co. industrial building index is up less than ½% for the year, through September, but this is in the six months since March; Aberthaw's December Index is up 2.4% since June; Smith, Hinchman & Grylls shows a 1.9% rise from November to November.

Irrigation and Hydro Cost Indexes

U S Bu Reclamation, 1949-51 = 1.0

	July	October			1960				1961			
Class of Construction	1940	1946	1949	1959	Jan	Apr	Jul	Oct	Jan	Apr	Jul	Oct
Composite Index	**0.47**	**0.84**	**1.02**	**1.26**	**1.27**	**1.24**	**1.25**	**1.25**	**1.26**	**1.26**	**1.26**	**1.27**
Dams, earth	0.51	0.98	1.05	1.12	1.13	1.10	1.07	1.07	1.09	1.09	1.09	1.10
Dam structure				0.99	0.99	0.95	0.91	0.91	0.93	0.93	0.93	0.95
Spillway				1.26	1.28	1.25	1.23	1.23	1.24	1.24	1.24	1.26
Outlet works				1.34	1.36	1.35	1.35	1.35	1.36	1.36	1.36	1.38
Dams, concrete	0.47	0.81	1.02	1.13	1.14	1.12	1.12	1.12	1.12	1.12	1.12	1.13
Dams, diversion				1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.39	1.40
Pumping plants, building & equip	0.48	0.76	0.97	1.48	1.48	1.44	1.46	1.44	1.44	1.42	1.42	1.44
Structure, rein conc, & improv	0.53	0.75	1.00	1.33	1.34	1.29	1.31	1.29	1.29	1.29	1.29	1.30
Equipment	0.56	0.77	0.94	1.70	1.70	1.70	1.71	1.68	1.67	1.65	1.65	1.66
Pumps & prime equipment			0.94	1.78	1.78	1.78	1.79	1.76	1.74	1.70	1.70	1.70
Accessory e'ec & misc equip			0.97	1.54	1.55	1.55	1.56	1.55	1.55	1.55	1.55	1.57
Steel penstocks, discharge pipes		0.69	0.94	1.77	1.77	1.77	1.78	1.78	1.78	1.78	1.78	1.80
Canals	0.47	0.86	1.02	1.11	1.11	1.06	1.11	1.11	1.11	1.10	1.10	1.10
Earthwork				1.06	1.06	1.01	1.06	1.06	1.07	1.05	1.05	1.05
Structures				1.16	1.16	1.12	1.16	1.16	1.16	1.15	1.15	1.17
Conduits (tunnels, conc-lined)		0.82	0.97	1.26	1.26	1.24	1.26	1.26	1.27	1.27	1.27	1.28
Laterals & drains	0.41	0.76	1.01	1.28	1.28	1.23	1.28	1.30	1.31	1.31	1.31	1.31
Earthwork				1.00	0.97	0.92	0.97	0.98	0.98	0.97	0.97	0.97
Structures				1.46	1.46	1.41	1.46	1.48	1.50	1.50	1.50	1.51
Power plants, hydro, bldg & equip	0.51	0.78	0.96	1.52	1.52	1.50	1.50	1.50	1.50	1.49	1.49	1.51
Structure, rein conc & improv	0.45	0.78	1.01	1.34	1.34	1.29	1.31	1.30	1.30	1.30	1.30	1.32
Equipment	0.55	0.78	0.93	1.65	1.65	1.65	1.63	1.63	1.62	1.60	1.60	1.61
Turbines & generators	0.56	0.80	0.94	1.68	1.68	1.68	1.65	1.65	1.65	1.63	1.63	1.63
Accessory electrical equip	0.54	0.73	0.92	1.56	1.56	1.56	1.56	1.55	1.50	1.48	1.48	1.50
Miscellaneous equipment	0.51	0.73	0.95	1.48	1.49	1.49	1.50	1.50	1.50	1.50	1.50	1.51
Concrete pipe lines				1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
Switchyards & substations	0.54	0.76	0.94	1.64	1.65	1.63	1.65	1.60	1.58	1.58	1.58	1.60
Transmission lines												
Wood-pole, 115-kv	0.52	0.99	1.11	1.23	1.25	1.28	1.28	1.26	1.27	1.27	1.27	1.28
Poles and fixtures				1.09	1.12	1.13	1.13	1.10	1.10	1.11	1.11	1.12
Overhead conductors, devices				1.34	1.35	1.39	1.39	1.39	1.40	1.40	1.40	1.41
Steel-tower, 230 kv				1.46	1.46	1.48	1.48	1.48	1.48	1.48	1.48	1.49
Primary roads	0.48	0.82	1.06	1.24	1.25	1.25	1.25	1.23	1.24	1.24	1.24	1.24
Secondary roads (unsurfaced)	0.50	0.86	1.08	1.17	1.18	1.17	1.16	1.15	1.18	1.18	1.18	1.18
Bridges, steel	0.46	0.85	1.01	1.48	1.48	1.46	1.48	1.48	1.49	1.49	1.49	1.51
General property—buildings	0.44	0.68	0.93	1.40	1.40	1.40	1.41	1.40	1.40	1.40	1.40	1.41

Based on combined costs of material and labor furnished by the contractor, and material and labor furnished by the governmen on US Bureau of Reclamation projects in 18 western states including Alaska.

Construction costs on irrigation and hydro jobs in 18 western states including Alaska held steady or increased slightly in October. The Bureau of Reclamation's index, based on the combined cost of materials and labor, is at 1.27 for October '61, 1.6% above October '60 and 0.8% above the 1959 value, based on 1949-51=100. The current index is 2.3% below the all-time record hit in October, 1957 and carried through January, 1958.

This 280-foot culvert will be covered in jig time by that small overhanging hill. Contractor Mitchell uses a half pound of Spencer N-IV/fuel oil mixture to move a cubic yard—and cut blasting costs to the bone.

Spencer AN/FO helps roadbuilder knock down mountains and costs

Easily handled Spencer N-IV is mixed with oil, poured in blast hole, and set off with one strand of 175-grain detonating cord. No need to ever store explosives on the job.

The completed road after the final cut has been made. When paved, it will become part of Alabama's state highway network.

Spencer N-IV/fuel oil mixture blasts mountains into pieces small enough to haul away like dirt

THIS is a 9½ mile state road being cut through rugged mountain country in northwest Alabama's Franklin County. General Contractor Clyde Mitchell has had to cut down mountains and fill valleys in order to get the job done. For economy as well as efficiency, he selected Spencer N-IV/fuel oil mixture as his blasting agent.

Explaining why he uses Spencer N-IV/fuel oil mixtures for blasting, Contractor Mitchell pointed out that it is cheaper than dynamite, and does such a fine job of pulverizing overburden that his trucks can simply haul it away like so much dirt.

The special prill structure of Spencer N-IV enables it to absorb oil more evenly than any other ammonium nitrate compound. This results in a compound uniformity that adds substantially to savings. And AN/FO using Spencer N-IV doesn't require special handling. A single strand of 175-grain detonating cord will set it off when you're ready. Conventional priming methods using high intensity boosters such as Spenite* are also suitable. You never need store dangerous high explosives at the job site.

To get all the facts about Spencer N-IV Ammonium Nitrate, write Spencer Chemical Company, Industrial Chemicals Division, 407 Dwight Building, Kansas City 5, Missouri.

*A registered trademark of Spencer Chemical Company

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The OWEN has a strong appetite for work—an appetite that is never satisfied. These are exclusive features that keep it working for you:

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Prompt service through ample inventory on new equipment and parts.

Write for OWEN information on how these features can make money for you.

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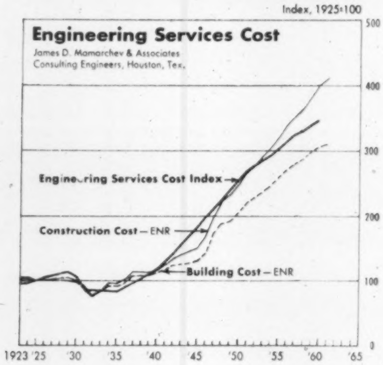


Engineering Services Costs Still Ride an Upward Trend

The price of engineering services is still following a persistent upward trend, but the rate of growth slowed down in 1960 according to James D. Mamarchev & Associates, consulting engineers of Houston, Tex.

The index hit 347 in 1960, an increase of only 1.8% over '59 and the smallest boost recorded during the decade of the '50's.

From 1956 to 1959 the index rose a steady 9 and 10 points per year. This was off the record 16 point increase registered in 1951 but well above '60's modest 6 point hike. The lower increase recorded in 1960 may be due to a reduction in overtime.

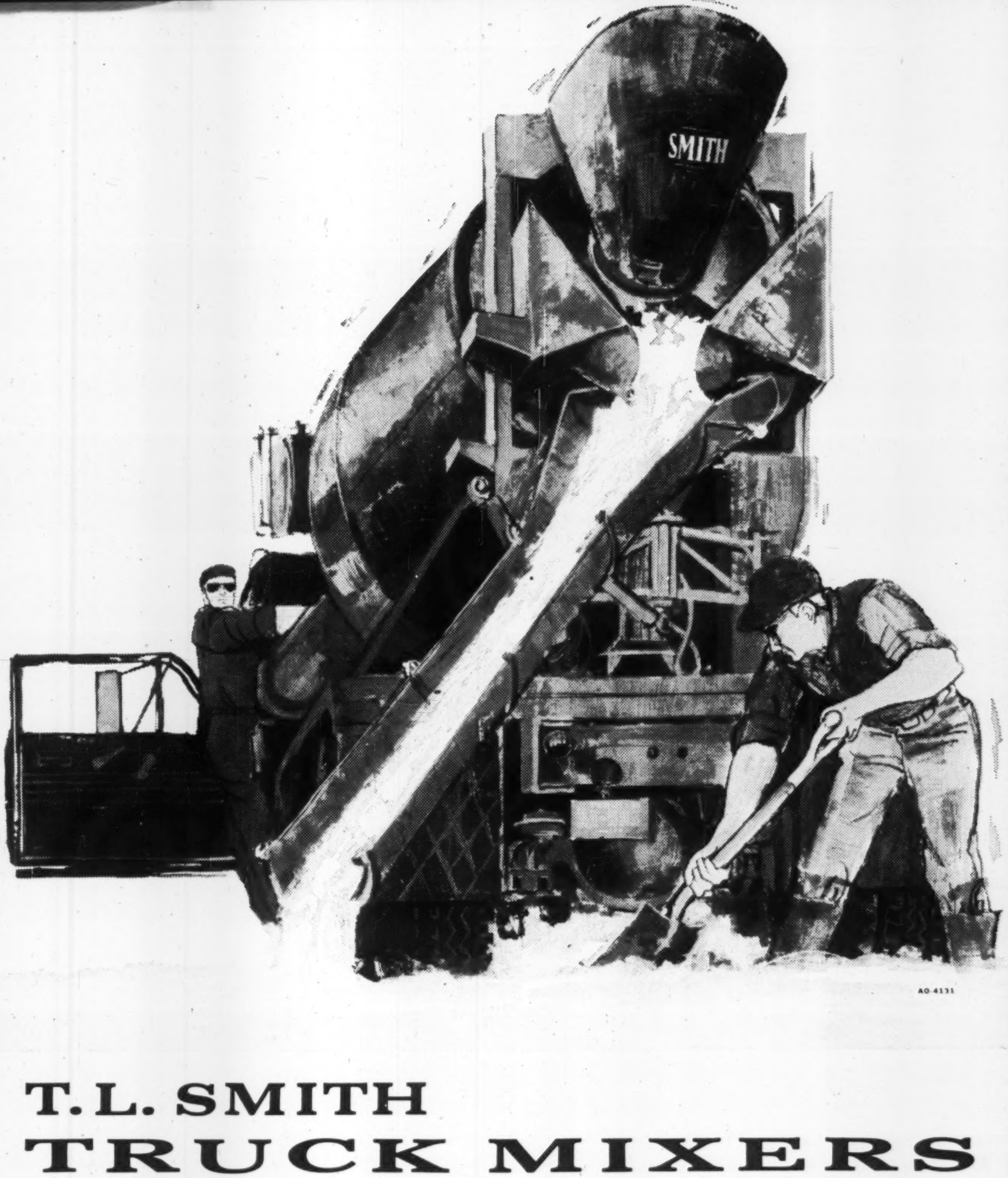
The Engineering Services Cost index measures the cost of an office and field engineering force comprised of a particular number of draftsmen, engineers, supervisors and clerical help necessary to plan, design and supervise construction of an industrial building of a designated size. Fringe benefits and overhead are included in the calculation, but no allowance is made for profit.

The index is based on 1925 as 100 and reflects the trend of cost engineering services since 1923. Basic cost figures for each grade of engineering force are collected and averaged on a national basis.

Engineering Services Cost Index, 1925=100

James D. Mamarchev & Associates, Houston, Texas

Yr.		Yr.		Yr.	
1923	96	1936	90	1948	226
'24	97	'37	97	'49	239
'25	100	'38	103	'50	251
'26	105	'39	110		
'27	108	'40	117	'51	267
'28	111			'52	275
'29	113	'41	130	'53	283
'30	106	'42	143	'54	291
		'43	156	'55	303
'31	87	'44	169		
'32	85	'45	182	'56	313
'33	85			'57	323
'34	84	'46	198	'58	332
'35	83	'47	211	'59	341
				'60	347



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For years, Smith Mixers have been the standard for the ready mixed industry. In addition to the chain driven mixer, only Smith offers you the gear driven truck mixer, with extra life, less maintenance, and an extended five year warranty.

Another exclusive feature on all Smith Mixers is the T-shaped blade, with full mixing and discharge fins throughout the drum. These mixing and discharge fins provide speedier, more thorough mixing, and faster discharge times than any other mixer even on the driest concrete . . . good reason why Smith is preferred by contractors and inspectors alike on the tough jobs where low slump specification-type concrete is required.

Regardless of the size or type you choose — separate engine, front PTO, or flywheel PTO — your Smith truck mixer is custom engineered to meet your specific job requirements.

For even greater payload in areas where weight restrictions are critical, Smith offers a complete range of aluminum components.

Get in touch with your Smith distributor today! See what a new Smith truck mixer can do for your operation . . . in terms of capacity, operation and lower maintenance costs.

SMITH **THE T. L. SMITH COMPANY**
Milwaukee, Wisconsin / Lufkin, Texas

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NOW...ALLIS-CHALMERS BRINGS YOU

NEW HD 7G FULL POWER STEERING BRAKING SHIFTING

A new combination of full power control—hydraulic steering, braking, and shifting—brings new output capacity and ease of operation to Allis-Chalmers 1¾-yard HD-7G. With a 100-hp turbocharged engine and torque converter drive, there's plenty of smooth, production-boosting power in this outstanding tractor shovel.

Easy! Power steering and power brakes—not only new ease of operation . . . but reduced maintenance and unusually long-life service as well! The reason—steering clutches and brakes run in a complete oil bath. Runs cool, with minimum brake adjustment, no steering clutch adjustment necessary at all!

Economical! Allis-Chalmers *7000* Turbocharged engine—delivers 100 net hp from a combustion system that has established itself as the most efficient in the industry. Controlled turbulence and open chamber combustion design provide a thorough mixing of air and fuel for fast, even, complete combustion . . . matchless fuel economy.

Fast work cycles with Power-Shift—The 7G combines smooth torque converter performance with single-lever Power-Shift transmission. You *shift on-the-go*—from any forward speed to any reverse speed, with an infinite number of speeds through the entire working range of up to 5.9 mph forward, up to 4.2 mph reverse.

Stable! Most track in its class—With 7-ft, 1⅝ in. of track on the ground, 62-in. tread, and 15-in. track shoes, the HD-7G has the extra stability to handle heaped loads with speed and safety . . . whatever the job, whatever the terrain.

Smooth! Exclusive Ground-Speed-Control—No need to limit your speed by shifting into lower gears. Set your speed automatically with Ground-Speed-Control. If you want the tractor to run at 2 mph, it moves at that speed with or without load, up to full engine power. There is no speed-up when the load is lightened, no slowdown when it is increased. You get smooth operation throughout the work cycle . . . top production all day long.

STEP UP YOUR

Performance
Operator comfort
Wearability
Ease of maintenance
Reliability

Your Allis-Chalmers dealer will be glad to arrange a full-scale demonstration on your job at your convenience. *Allis-Chalmers Construction Machinery Division, Milwaukee 1, Wisconsin.*

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POWER FOR A GROWING WORLD

CIRCLE 86 ON READER SERVICE CARD

100 HP
$1\frac{3}{4}$ YD
7 G

7 G

7 G
7 G

Rental Rates Drop, But

Construction machinery equipment rental rates are generally lower this year than last. More than half the types of major equipment listed in the table below could be rented for less this year than in '60, while one third of the items cost more to rent, and 12% stayed the same.

The biggest drops were in tractor scrapers, which fell off 11%, and in the largest sizes of graders with torque converters. Graders declined 8% for 25,001 to 29,500 lb and 10% for 29,501 to 45,000 lb.

Shovel loader rental rates are lower for most kinds reported, but slightly higher for two of the types noted. Centrifugal, self priming pumps are higher or stay the same.

Crawler tractor rates run counter to the downtrend. Following the pace set last year when most rental rates also dipped, crawler tractors with torque converters rose in four engine-horsepower size ranges and slipped in only one. Rental rates increased as much as 20% in the 165 to 185 hp range, and 9% for the 145-164 engine hp. The only decrease was in the largest size, 251-330 hp, which went down 8%.

Crawler shovels, ⅜ cu yd, also bucked the trend, increasing 12% over last year, more than reversing the 2% drop in 1960 from 1959 rental rates. Most other crawler shovel sizes are declining for the second year in a row, particularly the 2½- and 3-cu-yd sizes both of which slipped down 5% this year following drops of 4% each in 1960.

The pattern of reductions this year is about equal to last year's and much more widespread than in 1959.

List prices higher but steady—List prices of new construction machinery moved up a bit this year. The BLS index of primary market prices stands at 178.5, an increase of 1.7% over 1960.

All of the main categories increased except scrapers and graders, which declined 0.6% from last year. Portable air compressors made the sharpest increase, heading up 8.4% over '60. Tractor-mounted machinery increased 3.3%, paced by cable-controlled dozers, which went up 3.8% and hydraulic-controlled dozers, which moved up to 201.4, a 4.3% increase above '60.

Average prices of cranes, draglines, and shovels went up 0.6%, and tractors, pushed by a 3.3% increase in 50-75 drawbar hp crawler tractors, went up 1.6%. Contractors' air tools moved up 4.9% in 1960 and mixers, pavers and spreaders increased 2.6% over last year's value.

The charts on the opposite page show prices for five selected types of machinery, fob plant for 1961, and how they increase with the capacity of the construction equipment. The difference between 1958 and '61 represents the additional cost or savings of replacing equipment purchased in 1958 at today's prices.

Prices seem to be relatively stable, and according to several of the top equipment manufacturers, will remain at their present level for at least the next three months. One exception is a leading power shovel manufacturer, who feels that in light of recent labor and material prices, which are already showing up in a 1¼% increase over costs on which current price lists are based, it would not be unreasonable to expect a 2% list price increase during the first quarter of the year.

Most others stand pat on no increase for the first quarter. But this position

Construction Machinery Rental Rates

Associated Equipment Distributors, Chicago, Ill.

These rates are averages of prevailing rental rates made available for information purposes only. All rates are fob lessor's warehouse or shipping point. Lessee pays transportation cost to destination and return. Rates do not include operator, fuel or oil. Lessor bears cost of repairs due to normal wear and tear on non-tractor equipment, the lessee bears all other costs. For tractor and rubber-tired hauling equipment, the lessee bears all costs for maintenance and repair. Rates are based on one shift of 8 hours per day, 40 hours per week, 175 hours per month of a 30 consecutive day period. Overtime is prorated on a per-hour basis. Equipment is delivered to lessee in good operating condition and returned in as good condition less normal wear. Excessive cleaning or repairs may be charged to lessee. Rental rates start when equipment leaves lessor's delivery point. All rents are payable in advance. No insurance, license, sales or use taxes are included in these rates.

Type of equipment	Per Month	Per Week	Per Day	Chg. '60-'61 †%
AIR COMPRESSORS portable				
Gas, 86–105 cfm	184.00	62.25	18.50	−2
Gas, 126–160 cfm	246.00	81.75	24.50	−1
Gas, 186–210 cfm	330.00	110.00	32.75	−1
Gas, 251–315 cfm	453.00	150.00	45.75	−2
Diesel, 186–210 cfm	396.00	134.00	41.25	−2
Diesel, 251–315 cfm	532.00	175.00	55.75	0
Diesel, 366–500 cfm	734.00	245.00	74.50	0
Diesel, 501–600 cfm	888.00	299.00	96.50	−1
CRANES, cap at ft radius				
Diesel crawler (no bucket)				
Above 8⅜, to 11⅜ ton, 12′	1,258.00	410.00	146.00	+1
Above 14½, to 19½ ton, 12′	1,462.00	496.00	160.00	−4
Above 24½, to 29½ ton, 12′	1,952.00	628.00	236.00	−5
Above 29½, to 34½ ton, 12′	2,365.00	780.00	263.00	−4
Above 18, to 22 ton, 20′	3,040.00	1,026.00	336.00	−2
Above 10, to 13 ton, 45′	4,164.00	1,428.00	469.00	−2
Above 20, to 24½ ton, 45′	5,057.00	1,764.00	593.00	−2
GRADERS, diesel rubber tired				
Conventional transmission				
Up to 16,500 lbs	624.00	208.00	69.25	−4
16,501 to 20,500 lbs	791.00	274.00	85.25	−2
22,501 to 26,000 lbs	1,086.00	369.00	114.00	+2
26,001 to 30,000 lbs	1,302.00	458.00	138.00	−1
Torque converter				
16,000 to 21,000 lbs	1,063.00	350.00	122.00	−5
21,001 to 25,000 lbs	1,188.00	399.00	127.00	−4
25,000 to 29,500 lbs	1,319.00	445.00	145.00	−8
29,501 to 45,000 lbs	1,659.00	632.00	189.00	−10
LOADERS (SHOVEL), tractor				
Front end, wheel, mounted				
front or rear drive, gas				
Up to ⅜ cy	340.00	113.00	38.75	−6
Above ⅜, up to ½ cy	386.00	129.00	43.00	+1
Above ½, up to ⅝ cy	413.00	143.00	46.75	−7
Above ⅝, up to ¾ cy	484.00	169.00	54.75	−6
Above ¾, up to 1 cy	591.00	208.00	66.75	−5
Above 1, up to 1¼ cy	714.00	239.00	78.50	−5
Above 1⅝, up to 2 cy	1,231.00	414.00	134.00	+1
MIXERS, CONCRETE, portable				
Tilt drum, 3 to 3½ cf	65.75	23.50	7.85	0
Non-tilt, non pwr charge, 3½ cf	85.25	31.75	10.75	0
Non-tilt, power charge, 6 cf	133.00	47.25	15.25	+3
11 cf	190.00	66.25	23.00	+2
16 cf	265.00	89.00	30.75	0
Add for batchmeter*	14.50	5.30	2.65	+2
Add for pump*	12.25	4.30	1.80	+4
***Rates include measuring tank but not this**				
PUMPS**				
Centrifugal, self priming				
Gas, 1½-in, 4M–5M	52.25	18.25	6.05	+1
Gas, 2-in, 7M–8M	64.50	22.75	7.60	0
Gas, 4-in, 30M–40M	123.00	42.25	14.50	+1
Gas, 6-in, 90M	188.00	64.00	22.25	+1
****Hose not included**				
ROLLERS				
Diesel Engine Powered				
5–8 tons*	541.00	173.00	60.50	+4
ROLLERS continued				
6–9 tons	616.00	197.00	67.00	+1
8–10 tons	616.00	197.00	67.00	+1
8–14 tons	736.00	243.00	81.25	+1
10–14 tons	736.00	243.00	81.25	+1
10–16 tons	1,233.00	366.00	115.00	+1
***Net roller wt—max gross wt incl ballast**				
SHOVELS, diesel crawler				
⅜ cy	1,064.00	354.00	120.00	+12
½ cy	1,225.00	406.00	136.00	+3
¾ cy	1,392.00	490.00	165.00	−4
1 cy	2,055.00	676.00	220.00	−2
1½ cy	2,822.00	879.00	276.00	+8
2 cy	3,822.00	1,303.00	426.00	−3
2½ cy	4,127.00	1,454.00	479.00	−5
3 cy	5,398.00	1,882.00	616.00	−5
3½ cy	6,756.00	2,244.00	738.00	−1
SCRAPERS, w.o. power units				
Heaped capacity				
Above 5, up to 7 cy	375.00	125.00	39.25	−1
Above 7, up to 10 cy	488.00	157.00	48.25	0
Above 13½, up to 18 cy	673.00	217.00	71.00	−4
Above 17, up to 22 cy	879.00	277.00	91.75	−4
Above 22, up to 29 cy	1,101.00	393.00	126.00	−5
Above 29, up to 37 cy	1,604.00	547.00	177.00	−4
TRACTOR AND SCRAPER				
2-wheel tractor with 2-wheel scraper (heaped capacity)				
From 7 up to 13 cy	1,391.00	489.00	150.00	−4
From 13 up to 16 cy	1,921.00	704.00	225.00	−3
From 16 up to 21 cy	2,255.00	835.00	275.00	−6
From 18 up to 20 cy	2,396.00	844.00	287.00	−11
TRACTORS, diesel crawler				
Gear drive, w.o. attachments				
25– 35 drawbar hp	442.00	148.00	46.25	+7
36– 44 drawbar hp	554.00	184.00	63.00	−4
45– 59 drawbar hp	724.00	241.00	77.25	+3
60– 71 drawbar hp	829.00	273.00	85.75	−4
72– 79 drawbar hp	1,042.00	341.00	110.00	+3
80– 95 drawbar hp	1,109.00	398.00	130.00	−2
96–115 drawbar hp	1,408.00	456.00	148.00	0
116–131 drawbar hp	1,513.00	499.00	163.00	0
132–150 drawbar hp	1,620.00	546.00	172.00	−4
151–170 drawbar hp	1,964.00	706.00	231.00	−7
201–265 drawbar hp	3,116.00	1,108.00	347.00	−5
Torque Converter, without attachments				
120–144 net engine hp	1,638.00	537.00	174.00	+4
145–164 net engine hp	1,797.00	613.00	202.00	+9
165–185 net engine hp	2,166.00	729.00	235.00	+20
186–214 net engine hp	2,373.00	811.00	256.00	+3
251–330 net engine hp	3,367.00	1,288.00	415.00	−8
BULLDOZERS				
For crawler tractors of				
45– 55 drawbar hp	168.00	57.75	18.75	0
90–100 drawbar hp	240.00	79.75	28.50	+1
120–144 drawbar hp	285.00	95.25	33.50	0
165–185 drawbar hp	357.00	125.00	41.75	−2
251–330 drawbar hp	456.00	160.00	57.25	−6

†Percentage change in average monthly rates

Equipment Prices Are Slightly Higher

will undoubtedly be subject to review in the event of any significant cost increases next year.

The particular area to watch is steel. When the smoke has cleared from the bargaining table, steel may be ready to institute price boosts aimed at counteracting any wage increases. In that case it is not unlikely that the big equipment manufacturers will follow suit and boost their list prices to meet higher material costs.

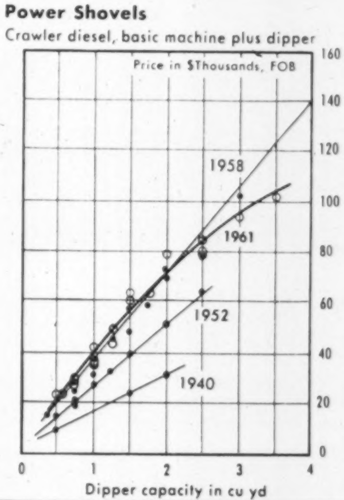
Construction Machinery Price Trend

BLS Primary Market Price Indexes, U. S. Department of Labor, 1947-49=100

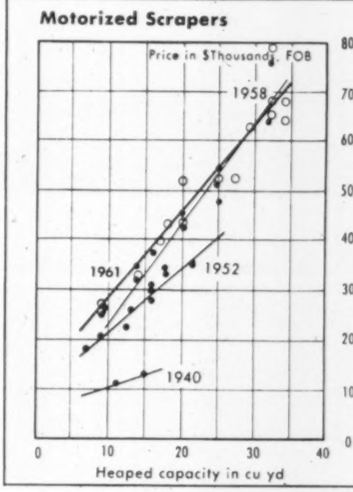
	1947	1949	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	Oct. 1961
All Types of Equipment	**90.0**	**108.3**	**123.6**	**125.4**	**129.3**	**131.6**	**137.1**	**148.6**	**160.0**	**166.3**	**172.1**	**175.6**	**178.5**
Cranes, Draglines, Shovels	**91.0**	**107.5**	**123.5**	**123.9**	**127.8**	**130.9**	**138.1**	**149.1**	**159.9**	**164.4**	**169.3**	**172.9**	**173.9**
Shovel, ½ cy	92.5	105.2	123.1	123.7	126.4	128.6	134.1	143.5	151.1	153.9	161.6	167.7	173.1
Shovel, ¾ cy	90.7	107.2	127.5	128.8	133.4	133.3	140.3	153.4	163.1	168.7	173.2	175.2	178.8
Shovel, 1-1½ cy	87.8	109.9	127.6	127.2	135.3	136.6	144.7	159.2	171.3	178.3	183.3	188.4	191.0
Shovel, 2-2½ cy	92.3	105.1	126.0	121.3	124.7	126.4	126.7	134.4	146.6	155.2	162.2	168.9	169.1
Shovel, 3-3½ cy	89.7	108.7	126.7	129.1	130.2	130.8	133.3	146.0	157.3	162.9	167.6	167.1	159.8
Shovel, 6 cy	84.5	112.2	129.8	131.7	136.7	138.8	145.4	160.9	175.3	181.3	190.9	196.7	201.2
Crane, truck mounted	90.1	108.3	126.4	126.4	131.6	133.7	141.5	154.5	162.3	164.9	167.1	168.2	167.0
Crane, tractor mounted	94.2	104.4	110.0	110.0	110.3	111.9	115.6	120.3	129.8	135.1	135.1	135.1	135.1
Bucket, clam shell	91.8	109.2	116.7	119.1	122.6	124.5	130.6	137.0	152.7	152.9	157.5	162.5	162.9
Bucket, dragline	83.1	107.4	112.6	112.6	119.2	134.9	155.4	166.6	180.8	181.9	171.0	169.3	169.3
Scrapers and Graders	**89.0**	**108.8**	**128.0**	**128.9**	**129.0**	**129.4**	**133.1**	**142.8**	**153.1**	**158.3**	**165.4**	**166.4**	**165.4**
Scraper, 4 Wheel, 8-10.5 cy	91.3	107.8	125.4	126.0	126.0	126.7	128.9	139.2	152.6	155.0	155.0	155.0	145.3
Scraper, 4 Wheel, 12-15 cy	94.4	104.7	127.1	126.9	124.4	124.4	126.1	134.3	146.2	151.6	156.8	156.8	153.3
Scraper, 2 Wheel, 15-19 cy (a)							100.0	109.2	116.6	123.0	123.9	125.9	126.2
Grader, heavy duty	88.2	109.2	127.1	128.6	133.0	134.8	137.8	147.6	158.2	162.8	172.4	173.6	173.5
Grader, light & medium	85.5	111.4	130.2	131.1	129.7	129.4	135.4	146.1	155.9	161.2	170.3	171.0	170.9
Tractors	**87.7**	**110.2**	**125.1**	**128.7**	**136.3**	**140.4**	**145.7**	**160.5**	**173.2**	**181.6**	**187.9**	**192.4**	**195.4**
Wheel-type, Off-highway (a)							100.0	113.0	121.6	128.7	128.3	129.2	127.6
Crawler type, under 49dhp	89.5	108.3	121.9	128.0	135.5	142.3	148.3	160.3	170.4	181.0	189.6	196.0	200.4
50-74 dhp	89.1	109.3	125.1	128.8	135.6	139.0	145.0	161.0	175.9	184.0	192.2	200.8	207.5
75-99 dhp	86.1	110.9	123.6	126.9	137.2	141.7	146.8	164.6	179.6	187.3	196.5	202.3	204.8
100-154 dph	87.3	111.0	124.6	127.9	137.3	140.6	148.2	164.7	177.6	187.2	191.5	196.1	200.7
155-200 dhp	86.8	110.9	130.1	136.5	143.9	150.4	154.1	169.9	182.7	192.9	201.3	204.4	208.6
Machinery, Tractor Mounted	**87.6**	**109.6**	**122.9**	**129.9**	**132.4**	**133.8**	**136.7**	**145.8**	**157.6**	**162.6**	**168.7**	**172.2**	**177.9**
Dozer, cable control	82.7	113.0	122.6	134.2	140.2	141.4	143.0	148.5	150.1	151.9	154.4	158.7	164.8
Dozer, hydraulic control	87.2	109.8	122.9	131.0	136.8	138.9	143.3	155.2	172.8	178.3	186.6	193.0	201.4
Cable, power control unit	89.0	107.2	123.1	121.8	122.2	122.1	126.6	133.0	142.4	148.1	151.4	152.5	148.8
Loader, shovel type	91.1	108.3	123.4	124.5	125.1	125.7	127.4	136.9	149.6	155.2	161.2	163.2	166.7
Specialized Machinery	**91.5**	**105.8**	**119.5**	**119.3**	**122.8**	**123.4**	**126.0**	**136.2**	**145.4**	**150.8**	**155.4**	**158.1**	**159.6**
Ditcher	87.4	108.3	118.6	118.7	121.7	124.2	129.2	142.5	152.2	154.0	155.4	152.0	153.8
Roller, tandem	96.7	101.7	130.9	129.2	144.3	146.0	147.5	164.3	182.3	193.6	211.1	225.8	228.5
Roller, 3 wheels	95.6	102.9	124.8	126.9	130.8	131.4	132.0	143.3	155.5	161.6	172.6	178.4	178.7
Ripper and rooter	90.5	108.5	116.7	115.6	114.4	116.7	118.4	126.0	138.9	143.3	150.5	157.1	164.5
Dewater, pump, 10 M gph	92.1	106.7	109.7	107.7	107.8	103.8	101.4	106.1	108.8	111.7	110.3	111.4	108.5
Dewater, pump, 90 M gph	88.6	110.2	117.0	117.0	117.9	115.8	119.9	125.7	134.1	144.3	149.7	151.5	156.1
Portable Air Compressors	**93.6**	**105.4**	**124.8**	**124.8**	**124.8**	**125.1**	**133.1**	**135.8**	**151.4**	**159.1**	**166.0**	**167.5**	**181.5**
Capacity, under 200 cfm	91.3	107.7	127.9	127.9	127.9	128.4	137.1	141.2	157.0	163.9	171.8	173.2	186.6
Capacity, over 200 cfm	95.8	103.1	121.7	121.7	121.7	121.7	129.2	130.3	146.0	154.6	160.8	162.4	177.0
Contractors Air Tools	**93.0**	**106.0**	**120.5**	**120.5**	**123.3**	**125.0**	**128.3**	**144.9**	**156.3**	**166.0**	**181.6**	**181.6**	**190.5**
Paving breaker	93.0	106.0	119.7	119.7	123.6	126.0		144.4	156.1	166.0	181.6	181.6	190.6
Mixers, Pavers, Spreaders	**92.7**	**107.5**	**118.0**	**118.1**	**121.3**	**122.0**	**127.7**	**135.3**	**143.4**	**149.7**	**156.3**	**159.9**	**164.2**
Mixer, portable, 6 cu ft	92.8	105.5	120.3	120.5	123.4	124.4	130.6	137.9	145.2	151.7	157.1	159.5	166.1
Mixer, portable, 11 cu ft	93.9	105.1	125.7	124.3	127.0	127.5	137.8	146.8	152.9	160.3	165.1	166.8	172.5
Mixer, portable, 16 cu ft	93.7	105.6	120.9	121.8	125.5	127.5	138.2	146.3	155.5	163.9	170.3	172.7	175.8
Mixer, truck, 6 cu yd	95.7	104.5	117.3	117.3	111.2	108.4	109.1	114.8	121.9	127.6	131.8	134.6	131.1
Mixer, paving, 34 cu ft	93.6	106.5	126.8	127.9	130.5	132.5	143.1	155.9	172.1	185.2	192.5	195.8	192.9
Concrete finisher and spreader	93.1	107.0	121.6	122.3	135.8	143.0	150.5	160.4	169.3	177.4	192.4	194.0	209.6
Bituminous distributor	90.2	112.9	106.7	106.7	108.3	105.0	103.9	109.6	115.9	122.4	122.3	126.2	124.5
Bituminous spreader	91.8	107.8	119.6	119.6	119.6	119.6	135.7	145.7	159.5	160.3	170.2	176.4	179.4
Bituminous paver	90.4	107.2	118.2	119.7	129.7	136.9	140.5	145.3	151.4	153.2	162.0	165.0	170.9

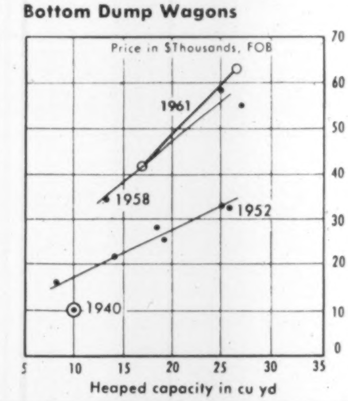
*a January 1955=100

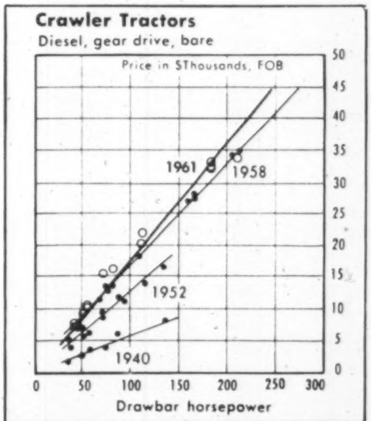
List Price vs Capacity


Power Shovels

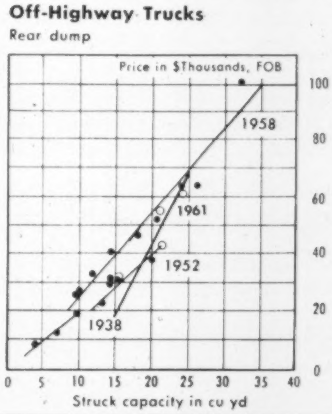
Crawler diesel, basic machine plus dipper


Motorized Scrapers

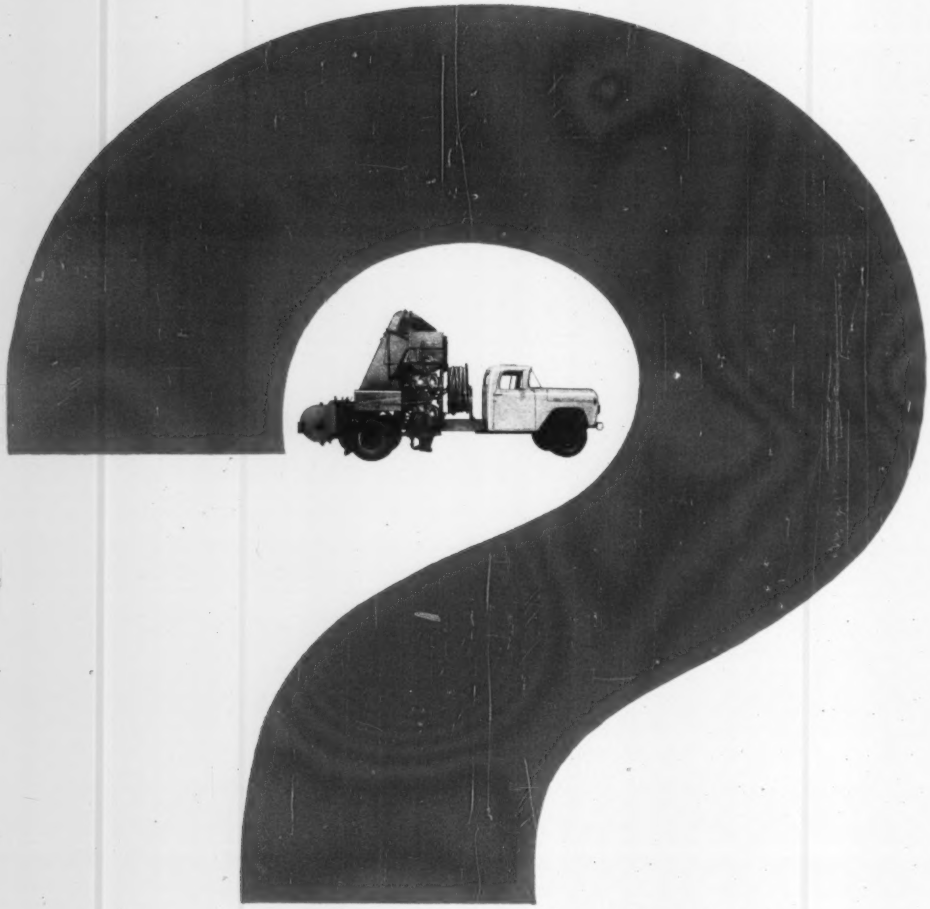

Bottom Dump Wagons


Crawler Tractors

Diesel, gear drive, bare


Off-Highway Trucks

Rear dump



IS THERE SOMETHING SPECIAL ABOUT CONCRETE GUNNING?

You bet there is—with Ridley guniting equipment! It's the fastest, most versatile and most profitable method of gunning concrete there is, and you can do it yourself. Perhaps you've heard that guniting is a limited construction method, and that the actual application is tricky and for specialists only. With Ridley rigs, nothing could be further from the truth. Guniting with Ridley is practical and profitable for just about any job, and your crews can be Ridley-trained to run the equipment in just a few days. Available in models with outputs ranging from 10 to 20 tons per hour, truck or trailer mounted, a Ridley rig belongs in your yard or jobsite as much as your 'dozers. Let us prove how profitable guniting with Ridley can be for your operation—write for complete information or, better yet, call Jack Thomas collect at BRadshaw 2-1638, Los Angeles. Ridley and Company, Incorporated, 2217 Pontius Avenue, Los Angeles 64, California.

RIDLEY

CIRCLE 90 ON READER SERVICE CARD

Where the Building Dollar Goes

Unit and Ratio Costs supplied through the courtesy of Vik Construction Co., Eugene, Ore.; V. L. Nicholson Co., Knoxville, Tenn.; B. G. Danis Co. Inc., Dayton, Ohio; Walter Nashert Co., Oklahoma City, Okla.; Donovan Bros., Inc., Philadelphia, Pa.; F. T. Thayer, Jr., General Contractor, Memphis, Tenn.

TYPE OF: Building	Men's Dormitory		Men's Dormitory		Factory		Hospital		Office —with—		Warehouse		School k		Lodge y		Church Educational Bldg.	
Construction outside walls	reinforced concrete brick		reinforced concrete brick		steel brick		concrete brick		wall bearing brick		(rear of office) prefab steel metal		wood frame wood siding		steel, conc, wood wood siding & conc bl		conc brick	
Date construction started	July 1960		July 1960		Oct. 11, 1960		April 1961		Nov. 1960		Nov. 1960		Nov. 1960		Oct. 1960		Nov. 6, 1961	
Location	Knoxville, Tenn.		Knoxville, Tenn.		Dayton, Ohio		Oklahoma City, Okla.		Philadelphia, Pa.		Philadelphia, Pa.		Roseburg, Ore.		Eugene, Ore.		Memphis, Tenn.	
SIZE OF BLDG:																		
Height, stories	.		5		2		2		1		1½		1		2 w/basement		2	
Floor area, sq ft	218,461		63,773		156,150		51,805		3,000		30,000		2,,145		29,367		35,293	
Volume, cu ft	2,260,862		740,974		2,631,190		.....		.....		.....		154,624		546,239		.....	
RANGE of Cost of this type Bldg:																	Min	Aver Max
$ per sq ft	$13 83		$15 56		$7 41		$23 72		$18 00		$4 25		$11 85		$16 90		$12.00	$15.54 $19.07
$ per cu ft	1 34		1 34		0 42		.....		.....		.....		1 60		0 90		.....	....
% Air Conditioned	10%		100%		0%		100%		100%		0%		0%		93%		100%	
Engineering News-Record Building Cost Index (1913=100) 20 cities average	559		559		561		569		561		561		561		561		571	
PRINCIPAL ITEMS OF COST—$ and % of Total Cost	$	%	$	%	$	%	$	%	$	%	$	%	$	%	$	%	$	%
Excavation and site improvements	16,400	1 54	12,390	1 24	19,000	4 30	23,383	1 90	1,000	1 90	3,000	2 40	13,321	5 30	29,234	5 90	17,547jj	3.40
Foundations	26,054	0 86	21,600	2 18	116,200	10 40	incl in str frame		2,000e	3 70	6,000	4 70	8,304	3 30	42,969	8 70	77,491	15.40
Structural frame	460,000	15 22	168,000	16 90	375,000	34 00	99,173	8 10	.....	.....	60,000j	47 00	m	.....	34,361z	6 90	.....	.....
Reinforcing steel	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	41,460	8.20
Cement finish work	incl in str frame		incl in str frame		2,000	0 17	7,327	0 60	3,000f	5 60	40,000	31 50	15,200	6 10	20,912	4 20	10,086	2 00
Exterior masonry	185,000	6 00	57,000	5 70	110,000	9 80	75,205c	6 10	9,000	16 70	.....	.....	.....	.....	5,660	1 10	48,685	9 60
Metal wall panels	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Structural prestr concrete	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16,501	3 30
Interior partitions	198,500	6 60	71,500	7 20	25,000	2 20	.....	.....	.....	.....	.....	.....	incl in carpentry		3,376aa	0 70	.....	.....
Carpentry and millwork	448,191	14 83	99,029	9 98	19,700	1 80	12,937	1 10	4,000	7 40	.....	.....	51,712	20 70	68,941	13 90	19,325kk	3 80
Sash and glazing	148,800	4 92	38,600	3 90	15,800	1 40	19,553	1 60	3,000g	5 60	.....	.....	3,512	1 40	10,353bb	2 10	46,869ll	9 20
Precast conc window units	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9,553	1 90
Doors	incl in millwork		incl in millwork		incl in hollow met & millwork		.....	.....	.....	.....	1,000	0.80	incl in millwork		cc	.....	3,414mm	0 70
Roofing	29,800	0 99	10,400	1 05	56,500	5 00	14,867	1 20	5,000h	9 20	.....	.....	6,102	2 40	8,947dd	1 80	9,500	1 90
Insulation	incl in carpentry		incl in carpentry		incl in refrig		.....	.....	.....	.....	.....	.....	1,013n	0 40	1,115	0 20	1,874nn	0 40
Waterproofing and dampproofing	15,700	0 52	8,300	0 84	950	0 08	76.00	0 01	.....	.....	.....	.....	.....	.....	.....	.....	2,496	0 50
Metal lath, furring and plastering	89,800	3 00	27,000	2 70	.....	.....	66,496	5 41	2,500	4 60	.....	.....	.....	.....	28,917ee	5 80	16,349oo	3 20
Hollow metal work	22,100	0 73	8,600	0 87	13,500	1 20	27,483	2 24	1,000	1 90			.....	.....	.....	.....	.....	.....
Misc iron and ornamental metal	92,400	3 10	27,500	2 80	24,400	2 10	67,257	5 40	500	0 90	2,000	1 60	9,611o	3 80	2,994o	0 60	19,004pp	3 80
Sheet metal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,940	0 80
Tile, terrazzo, and marble	129,800	4 30	44,000	4 40	6,100	0 54	40,995	3 30	600i	1 10	.....	.....	2,114p	0 80	4,812p	1 00	9,797	1 90
Floor covering	incl in tile, terrazzo & marble above				.....	.....	14,286	1 20	800	1 50	.....	.....	4,581q	1 80	12,976ff	2 60	5,535qq	1 10
Painting	68,600	2 30	16,600	1 70	31,600	2 80	11,982	0 97	1,200	2 20	2,000	1 60	3,487	1 40	5,939	1 20	12,974	2 60
Wood floors	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6,623	1 20
Finish hardware	31,000	1 00	9,800	0 99	6,500	0 58	27,760	2 30	500	0 90	.....	.....	5,838	2 30	2,848	0 60	7,255	1 40
Acoustical ceilings	28,200	0 93	9,600	0 98	.....	.....	14,000	1 14	890	1 50	.....	.....	11,226r	4 60	1,981	0 40	.....	.....
Plumbing	182,000	6 00	66,200	6 70	75,900	6 80	.....	.....	incl in heating etc.		10,000	7 90	22,719	9 10	37,406	7 50	19,069	3 80
Heating, ventilating, and air conditioning	243,800	8 10	137,400	13 80	41,100	3 70	257,000	20 91	12,000	22 30	.....	.....	22,921s	9 20	76,616	15 40	62,524	12 40
Electrical work and light fixtures	326,500	10 80	90,100	9 08	123,200	11 00	170,000	13 80	7,000	13 00	3,000	2 40	29,407	11 70	38,152	7 70	37,899rr	7 50
Elevators	180,000	5 96	26,400	2 70	4,900	0 43	37,188	3 02	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Special service equipment	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	29,497t	11 80	4,696gg	0 90	.....	.....
Chalk & tack board	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,062	0 40	.....	.....	.....	.....
Skylights	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,848	0 60	.....	.....
Intercommunication systems & T.V.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	incl in electrical u		5,490u	1 10	.....	.....
Steel fence	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6,040	2 40	.....	.....	.....	.....
Production equipment	.....	.....	.....	.....	.....	.....	73,582	6 00	.....	.....	.....	.....	v	.....	2,309hh	0 50	.....	.....
Other features	59,700a	1 98	12,100a	1 21	19,000b	1 70	78,843d	6 40	.....	.....	.....	.....	2,843w	1 10	7,323w	1 50	.....	.....
Kitchen equipment	.....	.....	27,400	2 80	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	35,344	7 10	.....	.....
Venetian blinds	9,800	0 22	2,800	0 28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	$3,022,145	100%	$992,229	100%	$1,116,350	100%	$1,229,252	100%	$53,900	100%	$127,000	100%	$250,510x	100%	$496,517ii	100%	$505,770	100%

a medicine cab, accessories & spec equip b metallic hardener in floor c not exterior d casework, asphalt paving & misc e incl piles & wood f incl conc grade beams g incl metal wall panels h roof deck & steel joists incl i tile only j incl frames, roof & walls k elementary l incl multi-purpose room; campus type str w/5 bldgs m wood in carpentry, 90%—steel in misc iron, 10% n thermal & soundproofing o no ornamental metal p tile & ceramic only q incl counter tops r incl hard board walls s no air conditioning t glu laminated beams & pylwood roof panels u no T.V. v stainless steel in sheet metal, kitchen equip under separate contract w miscellaneous x $/unit of cap=$20,875/cl room y fraternal organization z steel only aa drywall bb incl alum doors & auto openers cc wood incl in millwork, alum incl in glass dd incl sheet metal ee incl acoustical plaster ff incl terrazzo gg auto sprinklers hh cold room—& refrigerator ii $124/member jj incl grading, drainage & paving—exc. handwork $6,061 kk lmbr & rough carpentry=$6,107; millwork & finish carpentry=$13,218 ll steel sash, $6,100; glazing, $40,769 mm metal nn incl conc on roof oo plastering only pp metal only qq asphalt tile & linoleum rr elec wk only

Where the Building Dollar Goes, cont.

Unit and Ratio Costs supplied through the courtesy of Collins & Hobbs Inc., Chattanooga, Tenn.; Scrufari Construction Co. Inc., Niagara Falls, N. Y.; Harold E. Irwin Inc., Philadelphia, Pa.; Fiske-Carter Construction Co., Greenville, S. C.; F. T. Thayer, Jr., General Contractor, Memphis, Tenn.

TYPE OF: Building Construction: frame outside walls	Bowling Alley steel prefab metal brick & block		School steel brick		School steel masonry & window wall		Church wall bearing rigid frame		Church frame brick		Church steel & conc brick		Truck Maintenance block & bar joists block		Grocery Store steel brick		Grocery Store steel brick	
Date construction started	April 10, 1961		March 6, 1961		1961		1959		Sept. 1961		Sept. 18, 1961		July 1961		May 1, 1961		Sept. 1, 1961	
Location	Chattanooga, Tenn.		Signal Mountain, Tenn.		North Tonawanda, N. Y.		Niagara Falls, N. Y.		Philaselphia, Pa.		Memphis, Tenn.		Baltimore, Md.		Monroe, N. C.		Walhalla, S. C.	
SIZE OF BLDG:																		
Height, stories	1		1		1		1		1 & 2		1⅔ & basement		warehouse, 1-office, 2		1			
Floor area, sq ft	30,964		27,416		42,131		11,038		4,869		31,500		7,956		12,960		12,960	
Volume, cu ft	495,424		301,576		421,000		211,400		50,621		....		135,252		155,520		155,520	
RANGE of Cost of this type Bldg:											Min / Aver / Max							
$ per sq ft	$7.88		$11.37		$16.73		$32.42		$20.85		$19.71 / $19.00 / $20.10		$8.00		$8.06		$9.18	
$ per cu ft	0.49		1.03		1.675		1.6925		2.00		.... /		0.47		0.67		0.77	
% Air Conditioned	100%		0%		0%		0%		0%		100%		0%		75%		75%	
Engineering News-Record Building Cost Index (1913 = 100) 20-cities average	569		563				548		571		563		572		569		563	
PRINCIPAL ITEMS OF COST	$ and % of Total Cost																	
	$	%	$	%	$	%	$	%	$	%	$	%	$	%	$	%	$	%
Excavation and site improvements	7,669	3.14	16,289	5.23	15,467	2.20	23,825	6.66	4,224	4.10	15,739	3.00	2,900	4.60	10,767	10.30	18,850	15.80
Foundations	7,503	3.08	5,933	1.90	53,392	7.58	42,469	11.87	1,000	0.97	44,066	7.00	8,800k	3.80	1,097	1.05	1,200	1.00
Structural frame	58,000	23.78	31,542	10.10	38,780	5.50	21,500	6.00	6,000	5.90	54,188	9.10	5,325	8.37	10,398	9.95	10,000	8.40
Cement finish work	19,497	8.00	10,601	3.40	1,850	026	....	....	1,900	1.90	4,106	0.68	5,400	8.49	8,924	8.50	10,390	8.70
Exterior masonry	16,610	6.80	28,035	9.00	41,922	5.95	74,959	20.95	15,000	14.60	155,539	26.02	8,500	13.36	13,800	13.20	16,265	13.70
Metal wall panels	1,335	0.55	10,362	3.30	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Interior partitions	1,909	078	872	0.28	14,125	2.00	21,714	6.07	5,260	5.10	incl in exterior masonry		incl in masonry		980	0.94	950	0.80
Carpentry and millwork	13,363	5.50	25,163	8.10	61,201	8.68	17,069	4.77	12,200	11.89	21,026	3.50	3,700	5.80	7,296	7.00	8,859	7.45
Sash and glazing	5,168	2.12	12,568	4.03	51,743	7.34	7,662	2.14	500g	49	20,759	3.47	1,450	2.28	2,500	2.40	2,210	1.86
Doors	1,685	0.70	4,062	1.30	2,710	0.38	475	0.13	1,750	1.70	incl in carpentry & millwork		250	0.39	1,350	1.30	....	....
Roofing	533	0.22	21,963	7.05	23,632b	3.35	15,665b	4.38	1,300	1.27	23,576	4.00	4,800	7.54	4,275	4.10	4,300	3.60
Insulation	2,326	0.95	....	....	....	....	....	....	250	0.24	10,856i	2.00	200	0.31	740	0.71	1,250	1.10
Waterproofing and dampproofing	....	....	....	....	795	0.13	250	0.07	200	0.19	5,701	0.95	....	....	....	....	....	....
Metal lath, furring, and plastering	2,310	0.94	14,506	4.70	16,456	2.34	26,342	7.36	6,000	5.90	40,721	6.80	....	....	200	0.19	....	....
Hollow metal work	....	....	....	....	....	....	....	....	200	0.19	1,203	0.02	200	0.31	....	....	....	....
Miscellaneous iron and ornamental metal	5,950	2.40	5,184	1.70	16,330	2.32	8,873	2.48	2,200	2.15	2,318	0.30	300	0.47	....	....	....	....
Tile, terrazzo, and marble	3,914	1.60	5,116	1.60	47,861	6.79	21,400	5.98	....		22,505	3.70	....	....	....	....	....	....
Floor covering			3,391	1.10	12,037c	1.71	578c	0.16	400	0.39	incl in tile		300	0.47	3,000	2.90	4,000	3.40
Painting	1,263	1.70	7,162	2.30	16,911	2.40	5,760	1.60	4,860	4.74	20,468	3.40	1,500	2.36	1,710	1.64	1,400	1.20
Finish hardware	640	0.26	3,772	1.21	13,988	1.99	....		2,500	2.40	5,930	1.00	525	0.82	3,375	3.23	2,946	2.50
Acoustical ceilings	20,393	8.36	....		5,738	0.81	175	0.05	....		3,725	0.60	200	0.31	4,600	4.40	5,050	4.20
Plumbing	5,761	2.40	66,251	21.26	55,217	7.80	5,772	1.61	5,000	4.90	21,270	3.56	5,000	7.90	5,222	5.00	6,800	5.70
Heating, ventilating, and air conditioning	29,870	12.24	....	....	76,854	10.90	18,790	5.25	14,000	13.65	82,585	14.00	7,200	11.32	9,000	8.60	9,000	7.60
Electrical work and light fixtures	29,860	12.24	21,613	6.90	79,620	11.30	13,527	3.78	10,800	10.53	41,412j	6.90	4,665	7.30	11,600	11.09	14,350	12.00
Foundation piles	....	....	....	....	....		15,270	4.27	....	....	....	....	....	....	....	....	....	....
Special service equipment	....	....	....	....	4,594d	0.65	....	....	....	....	....	....	....	....	....	....	....	....
Folding partitions	....	....	....	....	6,953	0.99	....	....	....	....	....	....	....	....	....	....	....	....
Production equipment			5,560	1.80	12,868e	1.83	....	....	....	....	....	....	....	....	....	....	....	....
Other features	401	0.16	3,843a	1.20	33,813f	4.80	15,800f	4.42	....	....	....	....	2,400l	3.80	2,011m	1.90	1,180m	0.99
Outside walks	1,170	0.48	2,292	0.74	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Demolition	....	....	....	....	....	....	....	....	7,000	6.80	....	....	....	....	....	....	....	....
Drainage	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1,677	1.60	....	....
Utilities, housekeeping & supervision	3,820	1.60	5,607	1.80	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total	$243,950	100%	$311,687	100%	$704,857	100%	$357,875	100%	$102,544h	100%	$597,693	100%	$63,615	100%	$104,522	100%	$119,000	100%

a permit, preparation & bond b incl sheet metal c incl wall covering d incinerator e special school equipment f roof deck g no sash h unit of cap = $4,000 per pew i incl deck j incl intercommunication sys & T.V. k incl piling l overhead doors m wall finish

This report is the twenty-second in Engineering News-Record's Building Dollar series. Earlier reports were published in ENR Oct., 1953; Sept. 29, 1955; July 5, 1956; Aug. 2, 1956; Dec. 6, 1956; Oct. 17, 1957; Mar. 20, 1958; Dec. 25, 1958; Mar. 19, 1959; June 18, 1959; Dec. 17, 1959; Mar. 24, 1960; June 23, 1960; Sept. 22, 1960; Dec. 22, 1960; Mar. 23, 1961; June 22, 1961; Sept. 21, 1961.

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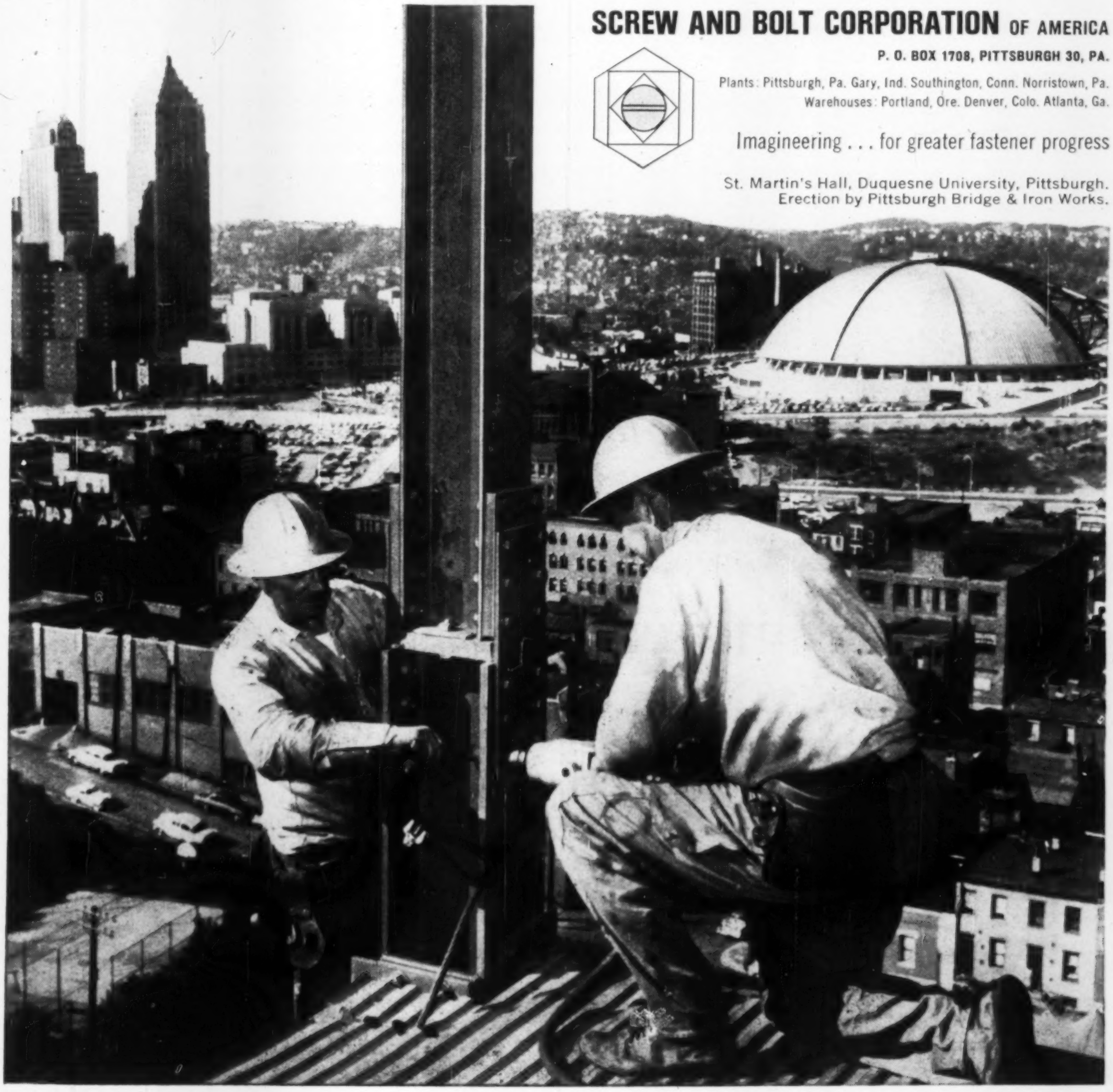

St. Martin's Hall, Duquesne University, Pittsburgh.
Erection by Pittsburgh Bridge & Iron Works.

Coast Guard wins battle against corrosion

Oceans of paint couldn't save the old fence at the United States Coast Guard Receiving Station, Cape May, N.J. So, to conserve tax dollars, the Coast Guard specified *aluminum* fence in a contract won by Aluminum Fence Company of America, Youngstown, Ohio.

Woven of Alcoa® Aluminum Wire, new fencing for the historic Coast Guard station was erected by the Mitchell Welding & Iron Works, Wildwood, N.J. Said owner Harry A. Mitchell, "In spite of the Coast Guard's regular repainting program, we found the old posts had rusted through from the *inside out*. That's why I believe aluminum is *the answer* down here on the Jersey shore. You just can't keep ahead of salt-spray corrosion with paint.

"Aluminum chain link fence is much easier to install! It takes *four* men to wrestle a 50-ft roll of 7-ft, .06 gage fencing of conventional material. *Two* men handle it in aluminum! I worked a smaller crew out on Cape May for a big reduction in labor time and costs. That's a good, strong fence, and *looks* it," Mr. Mitchell says.

For lowest long-run cost in *any* location, more and more engineers specify chain link fencing of Alcoa Aluminum. Want more information, or names of Alcoa-approved weaver/erectors? Call your nearest Alcoa sales office, or write: Aluminum Company of America, 895-M Alcoa Building, Pittsburgh 19, Pa.

CIRCLE 94 ON READER SERVICE CARD

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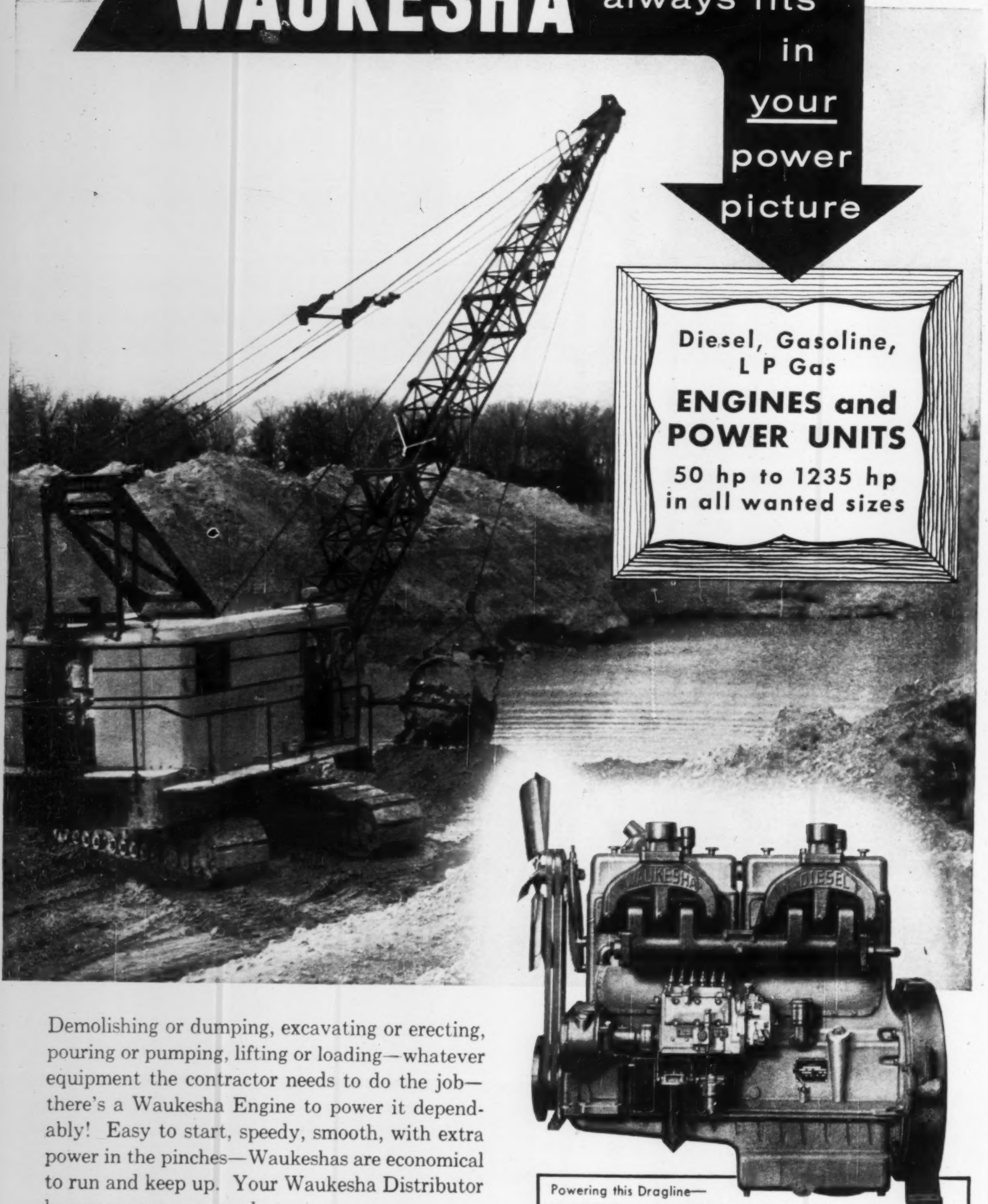

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New Jersey Sewers Priced by Depth

Four sewer contracts let by the Ewing-Lawrence Sewerage Authority, Mercer County, N. J. to extend the existing system in Ewing and Lawrence townships total $1,023,839. Buck, Seifert and Jost, of New York City, are consultants.

H. W. Alward, Inc., Bernardsville, took two of these contracts, the only Lawrensce job with a $291,547 bid, 15% under the next closest and 33% under the high of four and a $165,726 Ewing contract on a low 14% under the second bid and 33% under the high of five.

In the Lawrence township section, 34% of total cost is taken by 18,590 lin ft of 8-in. vitrified clay sewer pipe, 6 to 8 ft deep. Price ranged from $5.40 to $10.88 a lf including excavation and backfilling, furnishing, hauling and laying. This was a major item also in the Ewing section and Alward's low pricing of this pipe was a decisive factor in both awards. In the Ewing section prices for 10,720 lin ft of 8-in. vitrified clay sewer pipe, 6 to 8 ft deep ranged from Alward's $4.90 a lin ft to $9.50.

The bidding included:

1C	H. W. Alward, Inc., Bernardsville, N.J.	$291,547
2	D'Annunzio Bros., Inc., Scotch Plains, N.J.	342,510
4	United Foundation Corp., Union, N.J.	493,009

Bids: 10-20-61 Items	Unit	Quan-tity	Unit Prices 1C	 2
VCP, sew*				
6″ house connect	lf	1,950	4.95	5.00
8″, 0′– 6′ deep	lf	1,570	4.90	5.00
6′– 8′	lf	18,590	5.40	7.00
8′–10′	lf	5,630	6.50	7.00
10′–12′	lf	1,860	9.50	10.00
12′–14′	lf	500	13.00	15.00
14′–18′	lf	570	18.00	20.00
16′–18′	lf	560	23.00	25.00
18′–20′	lf	470	30.00	30.00
CIP, 8″ sew, 0′– 6′ deep	lf	40	8.00	10.00
6′– 8′	lf	10	10.00	12.00
8′–10′	lf	30	12.00	15.00
10′–12′	lf	80	14.00	20.00
12′–14′	lf	30	18.00	30.00
MHs, std.* 0′– 9′ deep	ea	88	275.00	300.00
9 01′–13′	ea	20	425.00	400.00
13 01′–18′	ea	4	750.00	500.00
18 01′–23′	ea	2	925.00	800.00
Drop connections to MHs*	ea	13	140.00	100.00
Wyes, 8″ x 6″	ea	240	12.00	10.00
Chimneys, const*	ea	27	35.00	50.00
Crossing & spec const nr Trenton-Princeton Rd	ls	job	1,600	1,000
nr intersection of Parkway & Marion Avs	ls	job	750.00	1,000
on Trenton-Lawrenceville Rd	ls	job	750.00	1,000
RR on Elridge Ave	ls	job	725.00	3,000
RR on Eqqerts Crossing Rd	ls	job	725.00	3,000
Excavation, rock	cy	1,000	12.00	10.00
earth, added	cy	1,200	1.00	8.00
Masonry, add/omit,				
conc, cl B	cy	5	45.00	50.00
brick	cy	5	50.00	60.00
Sheeting, lip	Mbf	10	150.00	200.00
Lumber, used in fndn	Mbf	1	150.00	200.00
Grav & sandcmt mix used in fndn/elsewhere				
grav/crushed stone, gr	cy	1,300	7.00	8.00
run-of-bank grav	cy	150	3.00	5.00
sandcmt mix	cy	50	15.00	15.00

* incl exc & bf, fur, haul & lay

Completion date: 10-20-61

ENR Constr. Cost Index (1913=100) 20-cities avg.—854.48

1C	H. W. Alward, Inc., Bernardsville, N.J.	$165,720
2	The Catt Corp., Eatontown, N.J.	191,006
5	Miele-Salvatore Associates, Orange, N.J.	246,040

Bids: 10-20-61 Items	Unit	Quan-tity	Unit Prices 1C	 2
VCP, sew				
6″ house connect	lf	2,740	$4.95	$5.00
8″, 0′– 6′ deep	lf	40	4.40	6.00
6 – 8′	lf	10,720	4.90	6.50
8′–10′	lf	3,560	6.00	7.00
10′–12′	lf	2,450	9.00	9.00
12′–14′	lf	710	12.00	11.00
8″ CIP, sew,* 0′–8′ deep	lf	40	8.00	15.00
MHs, std*, 0′– 9′ deep	ea	46	275.00	275.00
9 01′–13′	ea	16	425.00	375.00
13 01′–18′	ea	3	700.00	500.00
Drop connections to MHs	ea	11	150.00	150.00
Wyes, 8″ x 6″*	ea	260	10.00	7.00
Chimneys, const*	ea	44	30.00	40.00
Creek cross*	ls	job	725.00	800.00
Excavation, rock	cy	1,000	9.00	10.00
earth, added	cy	800	1.00	6.00
Masonry, add/omit,				
conc, cl B	cy	5	45.00	40.00
brick	cy	5	50.00	80.00
Sheeting, lip	Mbf	15	150.00	200.00
Lumber, used in fndn	Mbf	1	150.00	300.00
Grav & sandcmt mix used in fndn/elsewhere				
grav/crushed stone, gr	cy	800	7.00	8.00
run-of-bank grav	cy	200	3.00	6.00
sandcmt mix	cy	35	15.00	12.00

* incl exc & bf, fur, haul & lay

Completion time: 240 calendar days

ENR Constr. Cost Index (1913=100) 20-cities avg.—854.48

Penn-Jersey, Contractors, Inc. of Trenton got the largest single job, a $407,541 contract in Ewing with a bid 32% under the nearest competitor and 40% under the high of four.

The major cost item here, 12% of total cost is involved in 2,480 lin ft of 15-in. vitrified clay sewer pipe at a depth of 14 to 16 ft. Prices ranged from $23.60 to $40.86 a lin ft.

The bidding included:

1C	Penn-Jersey Contractors, Inc., Trenton, N.J.	$407,541
2	D'Annunzio Bros., Inc., Scotch Plains, N.J.	597,600
4	United Foundation Corp., Union, N.J.	674,063

Bids: 10-20-61 Items	Unit	Quan-tity	Unit Prices 1C	 2
VCP, sew*				
6″ house connect	lf	2,400	$4.70	$6.00
8″, 0′– 6′ deep	lf	60	4.10	7.00
6′– 8′	lf	11,540	4.15	9.00
8′–10′	lf	6,580	5.10	10.00
10′–12′	lf	2,150	8.50	12.00
12′–14′	lf	1,050	10.00	15.00
14′–16′	lf	710	16.00	20.00
16′–18′	lf	440	18.00	25.00
18′–20′	lf	210	21.00	30.00
CIP*, 8″ sew, 0′– 6′ deep	lf	100	6.50	10.00
8′–10′	lf	10	6.50	12.00
10′–12′	lf	80	6.50	15.00
12′–14′	lf	210	6.50	20.00
14′–16′	lf	10	7.00	25.00
16′–18′	lf	25	9.00	30.00
18′–20′	lf	20	10.00	40.00
15″ VCP*, sew, 12′–14′ deep	lf	1,710	21.00	20.00
14′–16′	lf	2,480	23.60	25.00
16′–18′	lf	300	27.30	30.00
18′–20′	lf	300	31.50	40.00
20′–22′	lf	320	35.00	50.00
CIP, force main pipe, 10″ bell & spigot	lf	3,645	10.00	10.00
MHs, std, 0′– 9′ deep	ea	59	250.00	300.00
9 01′–13′	ea	34	305.00	400.00
13 01′–18′	ea	6	400.00	500.00
18 01′–23′	ea	4	500.00	800.00
Drop connections to MHs*	ea	12	60.00	100.00
MH* air relief on force main	ea	2	360.00	500.00
Wyes* 15″–6″	ea	30	24.00	30.00
8″–6″	ea	225	4.10	10.00
Chimneys, const	ea	34	40.00	50.00
RR Xing	ls	job	2,500	7,000
Canal Feeder Xing	ls	job	2,400	10,000
RR & Canal Feeder Xing	ls	job	4,800	20,000
RR & Canal Feeder Xing at force main easement	ls	job	5,100	20,000
Force main stream, (1)	ls	job	600.00	500.00
(2)	ls	job	550.00	500.00
(3)	ls	job	600.00	1,000
(4)	ls	job	500.00	500.00
Stream Xing, gravity sew	ls	job	1,250	2,000
Excavation, rock	cy	3,000	10.50	10.00
earth, add	cy	1,000	1.25	8.00
Masonry, add/omit,				
conc, clB	cy	5	60.00	50.00
brick	cy	5	60.00	60.00
Sheeting, lip	Mbf	20	190.00	200.00
Lumber, used in fndn	Mbf	1	180.00	200.00
Grav & sandcmt mix used in fndn/elsewhere				
grav/crushed stone, gr	cy	1,200	6.00	8.00
run-of-bank grav	cy	500	2.75	5.00
sandcmt. mix	cy	50	15.00	15.00

* incl exc & bf, fur, haul & lay

Completion time: 300 calendar days

ENR Constr. Cost Index (1913=100) 20-cities avg.—854.48

In the most competitive bidding of the day, Caruso Brothers of Elizabeth won a $159,025 contract in Ewing with a bid only 2% under the second low and 39% below the high of eight.

Caruso's low bid for the furnishing and laying of 10,300 lin ft of 8-in. vitrified clay sewer pipe at a depth of 6 to 8 ft was the decisive pricing in this section. A total of 26% of cost, prices ranged from Caruso's $4.00 a lin ft to $8.00.

Bidding here included:

1C	Caruso Brothers, Elizabeth, N.J.	$159,025
2	William Bucci, Skillman, N.J.	162,481
7	Miele-Salvatore Associates, Orange, N.J.	259,313

Bids: 10-20-61 Items	Unit	Quan-tity	Unit Prices 1C	 2
VCP, sew*				
6″ house connect	lf	3,220	$4.50	$4.50
8″ sew, 0′– 6′ deep	lf	440	4.00	5.50
6′– 8′	lf	10,300	4.00	5.60
8′–10′	lf	6,150	5.00	5.70
10′–12′	lf	2,130	6.00	6.50
12′–14′	lf	290	20.00	7.20
14′–16′	lf	100	25.00	8.00
CIP, 8″ sew, 6′– 8′ deep	lf	75	10.00	9.00
8′–10′	lf	35	15.00	10.00
MHs, std*, 0′– 9′ deep	ea	59	275.00	250.00
9 01′–13′	ea	13	325.00	270.00
13 01′–19′	ea	1	500.00	300.00
Drop connections to MHs*	ea	11	175.00	150.00
Wyes, 8″ x 6″*	ea	290	8.00	4.00
Chimneys, const*	ea	29	100.00	50.00
Crossings & special const*				
at Green Lane	ls	job	1,000	600.00
in easement (1)	ls	job	1,000	600.00
in easement (2)	ls	job	1,000	600.00
Excavation, rock	cy	800	8.00	0.01
earth, added	cy	1,000	2.00	0.80
Masonry, add/omit,				
conc, cl B	cy	5	35.00	100.00
brick	cy	5	50.00	100.00
Sheeting, lip	Mbf	10	250.00	100.00
Lumber, used in fndn	Mbf	1	250.00	100.00
Grav & sandcmt mix used in fndn/elsewhere				
grav/crushed stone, gr	cy	1,000	5.00	6.00
run-of-bank grav	cy	200	3.00	7.00
sandcmt mix	cy	10	20.00	15.00

* incl exc & bf, fur, haul & lay

Completion time: 300 calendar days

ENR Constr. Cost Index (1913=100) 20-cities avg.—854.48

Wage rates in the Mercer County area: common, $2.95; carpenters, $4.35; plumber, $4.95; steamfitter, $4.95; air tool operator, $3.60; truck drivers, 1½ ton, $3.34; shovel operators, $5.65.

Concrete Street Paving In Baltimore, Maryland

Low portland cement concrete prices won this $43,468 street paving contract for the Ruxton Contracting Co., Baltimore, Md. Ruxton's bid was 5% under second low and 26% under the high of three. Contract calls for improving paving in connection with a developer or builder or both. George V. Walters is highways engineer, City of Baltimore.

Taking 74% of total cost, portland cement concrete pavement, 8,540 sq yds, 7-inch depth is the major cost item here. Prices ranged from the low bidder's $4.20 a yd to $4.90 a yd. Minimum per cu yd is six bags with a strength of 3,600 psi in 28 days.

Another major cost item is 3,805 lin ft of cement concrete curb, type C, 14¼-in. depth, 8% of total cost. Prices ranged from Ruxton's $1.00 a yd to $1.75 a yd.

Six-inch corrugated metal underdrain pipe, 240 lin ft is AASHO M-136, priced from $1.00 to $2.20 a ft. Fixed priced at $1.00 a ft, 90 lin ft of 4-in. cast iron pipe under footways is AASHO M-101.

Sub-grade soil stabilization ran from $1.90 to $3.50 for 750 cu yd.

Prevailing hourly wage rates in the Baltimore area include: common labor, $2.10; truck drivers, 1½ ton, $2.10, under 4 cu yd, $2.20, over 4 cu yd $2.50; tractor operators, power cranes and shovels, motor grader operator, $3.45.

The bidding included:

1C	The Ruxton Contracting C., Baltimore, Md	$48,468
2	R. Marcantoni & Sons, Baltimore, Md	50,750
3	Joseph D. Reddington, Baltimore, Md	65,608
EE	George V Walters, Baltimore, Md	63,763

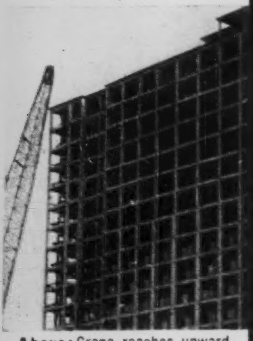
Bids: 10-25-61 Items	Unit	Quantity	Unit Prices 1C	 2
Grading & shaping, sub-gr				
city area	cy	975	$1.00	$0.40
special agree streets*	cy	955	1.25	1.25
Borrow excavation†				
special agree streets*	cy	955	1.25	1.25
other	cy	200	0.10	0.40
Stabilization, subgr soil	cy	750	1.90	2.30
crusher run limestone	t	75	2.40	2.00
Underdrain				
6", met, perf, corr	lf	240	1.00	1.35
Y & T sections	ea	12	5.00	10.00
4", under footways*	lf	90	1.00	1.00
Top soil*	cy	30	5.00	5.00
Grass sod	sy	30	0.10	0.55
Cement concrete				
pavement, 7" depth	sy	8,540	4.20	4.30
cy basis*	cy	14	20.00	20.00
curb, ty B*	lf	20	1.80	1.80
ty C, 14¼" depth	lf	3,805	1.00	1.30
headers, 9" width & 10" depth	lf	800	1.00	1.30
footway, 5" depth, incl 5" grading*	sy	80	5.50	5.50
Reinforcement: longitudinal tie bars, ⅝" screw type	ea	1,390	0.40	0.45
Expansion joints, load transfer	lf	529	0.90	0.80
Filler,* expansion joint ½"x7", preform fibre or cork	lf	40	0.25	0.25
½"x5", fibre	lf	145	0.15	0.15
Pavement, bit conc, hot plant mix*	t	9	15.00	15.00
Contraction joints, transverse	lf	2,550	0.20	0.25

* fixed price items † all following items complete in place except underdrains, Y & T sections

Completion time: 45 working days
Liquidated damages: $50 per day

ENR Constr. Cost Index (1913 = 100) 20-cities avg.—854.48

put yourself on
the work deck—and
compare these cranes



Above: Crane reaches upward from ground, has just limited reach into work area.

Right: Climbing crane hoists itself 2-3 floors at a time as structure is being built. No tower or ropes needed—climbs hydraulically, on floors or inside elevator shafts, to unlimited height. Jib rotates, reaches entire work area.

CONCRETOR®-LINDEN CRANE climbs to any desired height—picks up and places loads anywhere within 200′ diameter circle

If you were watching this crane at work—on the jobs it is handling right now—you'd see how dependably it is speeding contractors' progress —cutting their costs way down.

Note how this modern work-tool perches atop structure. 100 ft. jib rotates full circle. You pick up loads from any side, place them "on a dime"—out to perimeter or wherever desired. Concrete buggies? Outmoded. Deck ramps? Past history.

Send for magazine articles which describe this advancement in crane design. All electrical. Remote-controlled by one man on deck.

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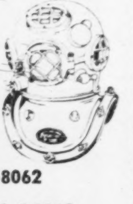

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Simple as dirt,
and almost
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Soil Saver applied to highly critical center of steep grade median strip.

Stabilizing grass growing through Soil Saver heavy jute mesh.

SOIL SAVER for highway erosion control

Are you one of those whose important concern is highway planning, construction and renewal? Then you need the essential facts about Soil Saver. Developed by Ludlow as a low-cost, simple, and effective method that immediately protects and secures seed and soil until it is permanently stabilized by vegetation, Soil Saver is a heavy jute mesh that wind, water or growing cover cannot displace.

Placed strategically in critical sections where flash run-offs and heavy rains threaten to erode or wash out new gradings on median strips, shoulder ditches and embankments, Soil Saver has dramatically proved itself with state highway departments across the country. Successful where other methods have failed, Soil Saver is both economical *and* effective. In rough comparison, costs of materials and labor for sod are 75% greater, while concrete and asphalt paving run a prohibitive 1400% greater than Soil Saver. Find out how Soil Saver can go to work for *you* . . . write Dept. EN-121 for full details.

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SOIL SAVER

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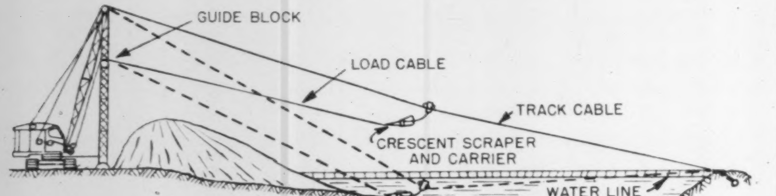
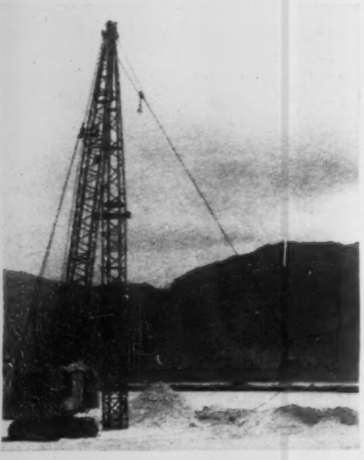
Crescent Scraper and Track Cable Extends Dragline Range, Cuts Costs



The reach of your dragline-crane can be greatly extended by using its hoisting line as a track cable for a Crescent Scraper Bucket and carrier assembly. This arrangement also permits deeper digging and recovery of material from soft ground without the use of mats or the hazard of undermining the crane.

A Crescent of greater capacity than the original dragline bucket can be used because it is much lighter size for size. When the boom is supported by an auxiliary strut as shown in the drawing, a Crescent Scraper Bucket of still greater size can be used.

▲ *A 4-yd. Crescent scraper reclaiming material from an underwater pile 300 ft. away. The bottomless scraper hauls at ground level to an elevated hopper over truck roadway. Crescent is lifted from hopper and gravity returned to pile by tensioning the track cable. The cable is moored to a float anchored about 500 ft. out in the bay.*



◀ *Crescent returning 350 ft. to excavation point. Maximum return by gravity is provided by holding the crane boom almost upright. Track cable is hooked to dozer and two anchors. Dozer is used to laterally shift tail assembly.*

•

Write or call giving make, model number and boom length of your dragline-crane. We will tell you what size Crescent is best suited to your equipment. Field Report No. 231 and Catalog J give more information on Crescent and crane setups.

SAUERMAN BROS., INC. 632 SO. 28th AVE. BELLWOOD, ILL.
LInden 4-4892 • Cable CABEX—Bellwood, Illinois

Crescent DragScrapers • Slackline and Tautline Cableways • Durolite Blocks

Concrete Slab Bridge On Prestressed Piles

This low bid of $34,950 was 26% under the second low and 33% under the high of four. Placed by Frank W. LaMotte, Columbia, S. C., it took the contract for construction of the 48-ft Wither's Swash Bridge, Myrtle Beach, S. C. Its three spans are three 16-ft reinforced concrete slabs supported by concrete pile bents. This concrete must test at 5,000 psi. The roadway will have four lanes and two six-ft sidewalks. W. K. Beckham is State Highway Engineer, Columbia, S. C.

In addition to conventional straightedges required for the bridge floors, the contractor is required to provide a rolling straightedge for use on the floors. The entire cost is included in the unit contract price bid for Class A concrete.

Class A concrete, which must test at 3,500 psi, ranged widely in price from LaMotte's low bid of $50.00 to $77.00 a yd. Another major cost item, square 14-inch prestressed concrete piling ranged from $8.00 a lin ft to $10.00 a lin ft for 1,440 lin ft.

Bulkheads and wings at the ends of the bridge are constructed with pre-cast concrete sheet piling. Prices for the 12-ft sheet piling ranged from $3.00 to $6.00 a lin ft for 1,416 ft.. The 18-ft sheet piling was priced from $3.35 to $6.00 a lin ft for 1,566 lin ft.

Concrete in prestressed girders and pilings is Class X with a minimum compressive strength of 5,000 psi. Reinforcing steel, 30,157 lb, ran from $0.12 to $0.15 a lb.

Predetermined minimum wages do not apply to this project as it does not come under the Davis-Bacon Act in conjunction with Interstate highway construction. The contractor is required, however, to abide by Federal Legislation in the Fair Labor Standards Act of 1938, as amended. The minimum hour wage is $1.15.

Wage rates prevailing in the area of Myrtle Beach include: common labor, $1.20; truck driver, 1½ ton, $1.15; carpenter, $2.90; structural ironworkers, $3.20; tractor operator, $2.00.

The bidding included:

1C	Frank W. LaMotte, Columbia, South Carolina	$34,951
2	Republic Contr. Corp., Columbia, South Carolina	47,151
4	Structures, Inc., Greenville, South Carolina	52,555

Bids: 10-17-61 Items	Unit	Quantity	Unit Prices 1C	 2
Conc, cl A	cy	181	50.00	$77.00
Steel, reinf	lb	30,157	0.12	0.13
Handrail, fabr met	lf	96	8.00	7.00
Piling, prestressed conc,				
14″ square	lf	1,440	8.00	10.00
RC sheet, precast, 12′	lf	1,416	3.00	4.25
18′	lf	1,566	3.35	4.60
Remov & dispos of exist 53′ tmbr bridge	ls	job	500.00	1,000

Completion time: 260 calendar days.
Liquidated damages: $10 per day.
ENR Constr. Cost Index (1913 = 100) 20-cities avg.—854.48

ASBESTOS-
CEMENT
SEWER-PIPE
BY
KEASBEY &
MATTISON

LAYING PIPE UNDER WATER was the tough assignment of Lloyd Kispert & Son, contractors of Green Bay, Wisconsin, at the town of Preble, Wisconsin.

Below the water table...water-tight joints

Lloyd Kispert & Son recently laid 3611 feet of 12-inch K&M Asbestos-Cement Sewer Pipe within a few hundred feet of Green Bay. The water table was so high that the pipe was laid under water. Nevertheless, all joints had to be infiltration-tight. On the next page, Mr. Kispert, in his own words, tells how he solved this problem.

You can dig flatter grades for K&M Asbestos-Cement Sewer Pipe because its bore remains smooth and clean.

Water, snow, mud, and rain can't hold up the installation of K&M Asbestos-Cement Sewer Pipe.

"K&M ASBESTOS-CEMENT GRAVITY SEWER PIPE GAVE US PERMANENTLY TIGHT JOINTS IN WET GOING!"

Mr. Lloyd Kispert

"This was an extremely rough job. But, with K&M Pipe, we got tight joints in wet going. The K&M FLUID-TITE® Coupling connected easily, even under water. The men just had to lubricate the tapered end of the pipe and slide it into the coupling. We didn't need any heavyweight coupling pullers. Our men had an easy time handling the pipe because of its light weight. We are very satisfied with K&M Pipe and will use it again."

You could lay K&M Asbestos-Cement Sewer Pipe at the bottom of a 58′ deep lake, and it would be infiltration-tight.

The smooth bore of this modern pipe remains clean, permanently. The friction coefficient is low. You can plan fewer lift stations and flatter grades.

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BEST IN ASBESTOS

Keasbey & Mattison
at Ambler

For more information on this top-quality gravity sewer pipe, write to: Keasbey & Mattison Company, Ambler, Pa.

14-8-9-in. Combination Underbid By . . .

All 14-in. Concrete Runway

St. Louis saved $28,125 on a $969,316 contract for its new parallel runway to existing NW-SE jetway at Lambert-St. Louis Municipal by standardizing on 14-in. unreinforced pavement at $5.70 per sq yd for 91,600 yd. Alternate bids priced 7,650 sq yd of 14-in. at $6.50, 26,200 sq yd of 9-in. reinforced concrete paving at $5.05 and 57,750 sq yd of 8-in. reinforced paving at $4.80.

This contract went to Frank Weber, Contractors, Inc., of St. Louis, on a bid 10% under the second low and 14% under the high of five. Both Weber and second low, Samuel Kraus Co., also of St. Louis, bid lower on all-14-in. concrete than on combination paving. Walter T. Malloy is chairman of the airport commission. Horner and Shifrin of St. Louis are the engineers.

The job calls for construction of a 4,600-ft runway, 150 ft wide with connecting taxiway 75 ft wide. The 14-in. pavement on compacted soil subgrade E7 is designed for 100,000-lb dual wheel load or 75,000-lb single wheel load. It matches the other paving at the field and thus will permit the unrestricted use of this runway for emergencies or taxiing of the heaviest aircraft on the airport. Extension to permit jet useage in the future can be done without strengthening.

The 8 and 9-in. pavement on a 7-in. crushed rock subbase, designed for a 35,000-lb single wheel load, was required by the Federal Aviation Agency, participants in the payment of this project. FAA participation was limited only to the cost of the lighter thickness, however, and since this was actually the more expensive alternate the FAA will now participate 50% in the cost of the 14-in. pavement.

Weber's low bid of $5.70 a yd for the major cost item of 91,600 sq yd of pavement was the deciding factor in the contract award. Bids ranged from $5.70 to $7.45 a yd. Concrete is a 5.8 sack mix with limestone aggregate and Missouri River sand. Prices for the alternate pavement were: 7,650 sq yd, 14-in. thick, from $6.50 to $10.00 a yd; 26,200 sq yd, 9 in., $5.05 to $6.50; 57,750 sq yd, 8 in., $4.80 to $5.75. Excavation, 15% of total cost, ranged in price from $0.40 to $0.63 a cu yd.

St. Louis wage rates include: common labor, $3.125; tractor operators, $4.175; power cranes and shovels, ½ and ¾ cu yd, $4.175; truck drivers, 1½ t, $3.20, under 4 cu yd, $3.40, over 4 cu yd, $3.50.

The bidding included:

1C	Fred Weber, Contractor, Inc., St. Louis, Mo.	$ 969,316
	alternate bid	997,441
2	Samuel Kraus Co., St. Louis, Mo.	1,081,423
	alternate bid	1,045,723
5	Millstone Const, Inc. & Bangert Bros., Road Builders, Inc., St. Louis, Mo. (a joint venture)	1,126,924
	alternate bid	1,093,864
EE	Horner & Shiflin, St. Louis, Mo.	1,231,198
	alternate bid	1,216,665

Bids: 11-7-61 Items	Unit	Quantity	Unit Prices 1C	2
Clearing	ls	job	$1,500	5,000
Demolition	ls	job	12,300	32,000
Excavation, unclassified				
base bid	cy	360,000	0.04	0.49
alternate	cy	355,000	0.40	0.50
Base course, crushed agg				
base bid	cy	800	6.30	6.97
alternate	cy	18,500	5.30	6.05
Bituminous, prime coat	gal	1,800	0.18	0.18
tack coat	gal	100	0.25	0.20
Surface crse, asph conc	t	600	8.00	8.00
Seal coat, coal tar pit eml	gal	1,200	1.50	0.80
Pavement, concrete				
base bid, 14" thick	sy	91,600	5.70	6.93
alternate, 14" thick	sy	7,650	6.50	7.77
9" thick	sy	26,200	5.05	5.47
8" thick	sy	57,750	4.80	5.00
Pavement, conc, overlay	cy	850	24.00	21.10
VCP, 21" extra strength	lf	800	14.86	14.00
Pipe, conc, sew				
8" standard strength	lf	220	7.10	5.00
extra strength	lf	140	7.30	5.00
12" standard strength	lf	140	7.65	6.00
RCP, c13, 18"	lf	930	9.85	11.00
21"	lf	260	10.90	10.00
24"	lf	110	12.10	11.00
36"	lf	900	17.20	18.00
c14, 42"	lf	600	22.10	24.00
Manhole	ea	7	700.00	400.00
Inlet	ea	13	500.00	450.00
Manhole top, adjust	ea	8	200.00	75.00
Inlet top, adjust	ea	1	200.00	75.00
MH, inlt to clos, conversion	ea	3	300.00	125.00
Headwall structure	ls	job	200.00	560.00
Duct, fiber, four-way	lf	1,475	13.20	5.77
six-way	lf	650	19.00	6.49
steel, drill, six-way	lf	80	52.00	30.00
eight-way	lf	80	60.00	37.00
trench, six-way	lf	76	31.00	15.41
eight-way	lf	76	39.00	19.00
dir burial cond.	lf	1,300	4.00	1.73
Cable trench	lf	18,000	0.65	0.30
In Trench				
Cable, conductor,				
single, no 8, 5000-V	lf	15,000	0.55	0.37
3000-V	lf	4,500	0.48	0.32
no 6, 3000-V	lf	1,500	0.90	0.39
three, no 10, 3000-V	lf	1,500	1.46	0.72
Wire, bare counterpoise, incl grd rods & grd connectors, no 4	lf	15,000	0.25	0.14
no 8	lf	4,500	0.17	0.10
In Duct				
Cable, conductor,				
single, no 8, 5000-V	lf	3,500	0.65	0.40
nonshield 5000-V	lf	1,500	0.61	0.27
3000-V	lf	2,000	0.57	0.37
no 6, 3000-V	lf	750	0.81	0.45
three, no 10, 3000-V	lf	750	1.68	0.77
Wire, bare counterpoise,				
no 4	lf	5,000	0.32	0.16
no 8	lf	2,000	0.23	0.09
Cable, stl armor, jute cover, two conductor, no 10, 5000-V	lf	300	1.72	3.50
control, lead-cov eleven pr, no 19	lf	300	3.25	2.00
telephone, twenty-six pr, neoprene sheath	lf	300	4.15	2.45
Taxiway light, relocation	ea	13	165.00	90.00
Taxiway guidance sign, relocation	ea	1	326.00	220.00
Runway light	ea	46	591.00	500.00
Manhole, electric, compl	ls	job	1,080	2,050
Taxiway light, base mount	ea	60	247.00	185.00
Taxiway guidance sign	ea	2	752.00	675.00
Threshold light	ea	16	610.00	521.00
Hazard beacon, pole mount	ea	3	1,933	1,925
Substation	ls	job	14,925	9,125
Runway marking	ls	job	6,310	6,325
Protection, soil erosion	ac	95	135.00	170.00

Completion time: 400 calendar days
Liquidated damages: $100 a day

ENR Constr. Cost Index (1913=100) 20-cities avg—855.35

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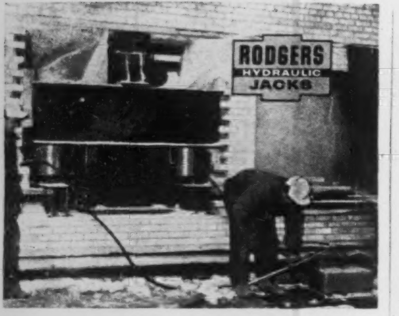

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CIRCLE 8 ON READER SERVICE CARD

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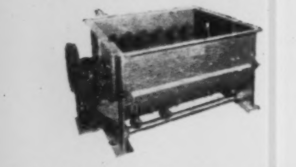

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• Large OD Steel pipe

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Railway Bridge Raised Under Traffic

This $1-million contract by the U. S. Corps of Engineers, St. Paul, Minn., with the joint venture of Al Johnson Construction Co., Minneapolis, and Peter Kiewit Sons' Co., Omaha, is for alteration of the Upper Great Northern Railway Co.'s five-span bridge over the Mississippi in connection with the Corps' St. Anthony Falls project in Minnesota.

The contractors must raise the bridge 18 in., replace two existing girder spans with a steel truss, double-track span of 170 ft 11 in. and width of 33 ft 6 in., remove one pier and reinforce others. They must coordinate this work both with work by railway company forces on the approaches and with the timetable of through trains that must be maintained. The weight of the truss span is estimated at 1,044,000 lbs of A7 steel, 230,000 lbs of A242 steel and 34,000 lbs for shoes. Cofferdams and dewatering take 15% of the cost and are required for construction of encasement for two piers.

The successful bidders were 6% under the next closest and 30% under the high of eight. They must complete by March 1, 1962, all substructure work in the cofferdams at the piers, including selected backfill and must remove cofferdams by March 15. The whole job must be complete by November 15. Liquidated damages for the substructure work at these piers is $500 a day, removal of cofferdams, $300 and total work, $200.

Wages applying to this job include: bricklayers, $4.025; carpenters, $3.68; cement masons, $3.70; structural and reinforcing ironworkers, $3.77; unskilled laborers, $2.98; concrete mixer operator, $3.35-$3.82.

The bidding here included:

1C	Al Johnson Const. Co., Minneapolis, Minn.; Peter Kiewit Sons' Co., Omaha, Neb	$1,011,6 7
2	John F. Beasley Const. Co., Chicago, Ill	1,079,245
8	Walter D. Gierstsen Co., Minneapolis, Minn	1,436,401
EE	U. S. Army Engineers	925,400

Bids: 10-31-61 Items	Unit	Quantity	Unit Prices 1C	 2
Substructure				
Cofferdams & unwatering	ls	job	$151,715	$227,000
Excavation	cy	840	9.40	10.00
Backfill, selected	cy	270	16.70	15.00
Pile wall, concrete, cip	lf	6,000	10.00	9.65
Drilling, grout holes, piers 2 & 4, mobilization & demobilization of drill equip	ls	job	920.00	900.00
drill holes, interior grout	lf	800	2.30	2.25
surface grout	lf	340	2.30	2.25
Intrustion grout, piers 2 & 4 mobilization & demobilization of grout equip	ls	job	1,530	1,500
interior grout	cf	2,400	1.40	1.35
surface grout	cf	100	35.00	34.00
cement	bag	900	2.00	1.95
filler mineral	bag	450	1.00	0.95
Drilling, dowel holes	lf	1,170	5.40	2.25
Dowels	lb	5,200	0.125	0.16
Dowels, setting in holes	ea	780	8.60	3.00
Cement for concrete	bbl	1,270	4.50	5.00
Concrete	cy	848	82.00	84.00
Steel reinforcement	lb	25,700	0.16	0.19
plate nosing	ls	job	1,000	535.00
Waterstops, copper	lf	142	5.00	4.25
Fences, guide	ls	job	92,000	60,000
Sheet rockflld pile cell	ea	8	7,000	3,500
Filter blanket	cy	110	6.30	17.00
Riprap	cy	215	23.00	17.00
Fill, conc or riprap	cy	8	43.00	50.00
Rem existing pier 3 & abandoned bridge pier	ls	job	14,000	15,000
Superstructure				
Raise existing bridge & related work	ls	job	66,000	108,000
Falsework & remove spans 2 & 3	ls	job	65,500	55,000
Steel truss span & bearing shoes	ls	job	333,000	365,000
Field painting, str truss span	ls	job	11,220	10,000
Ties, treated tmbr (install incl final install track)	Mbm	32.4	460.00	465.00
Walk, treated tmbr install	Mbm	6.4	650.00	345.00
Rails, inner grd, 2 tracks	ls	job	6,300	4,500
Lights, navigation	ls	job	9,500	10,000

ENR Constr. Cost Index (1913 = 100) 20-cities avg.—854.48
ENR Building Cost Index (1913 = 100) 20-cities avg.—570.55

Channel Deepening Offers Two Alternates

Dredging a navigation channel to the Ice Harbor Lock and Dam on the Snake River, Wash., requires 120,000 cu yd of unclassified excavation, most of it rock. The U. S. Corps of Engineers, Walla Walla, Wash., awarded this $910,000 contract to J. Adron Troxell, Seattle, on a bid 6% under the second low, but 62% under the high of eight. Of this total 18.7% goes for getting equipment onto the job and off. On this item the low bid topped the second by 54%.

The contractor has three choices: by underwater drilling and blasting of rock and removal by dredges and barges, or cofferdaming the work area and removing material in the dry, or he can elect a combination of these two. Rock is mainly in a 300 by 3,100-ft section of the river where cuts vary from grade to 8 ft. When blasting, care must be taken to protect the passage of fish that move along the river seasonally. The job, started October 31, must be completed by March 15, 1962, at a budgeted rate of 30,000 cu yd per month.

Basic wage rates in this area include: skilled, $3.85; semi-skilled, $3.25; common, $3.00.

The bidding included:

1C	J Adron Troxell, Seattle, Wash	$910,000
2	Morrison Knudsen Co., Inc.; Leboeuf Dougherty Contr. Co. (joint venture), Seattle, Wash.	969,948
6	Great Lakes Dredge & Dock Co., Chicago, Ill.	2,427,000
EE	U. S. Corps of Engineers, without profit	857,050

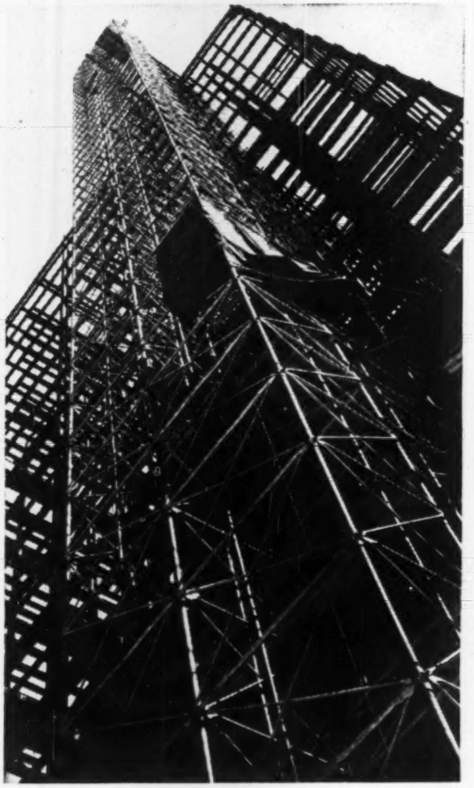
Bids: 10-24-61 Items	Unit	Quantity	Unit Prices 1C	 2
Mobilize & demobilize	ls	job	$170,000	$109,948
Excavation, unclassified				
first 80,000 cy	cy	80,000	$8.00	$9.50
over 80,000 cy	cy	40,000	2.50	2.50

Starting date: Oct. 31, 1961
Completion date: March 15, 1962

Liquidated damages: $500 per day

ENR Constr. Cost Index (1913 = 100) 20-cities avg.—854.48

Scaffolding and Shoring Methods . . . by PSCO

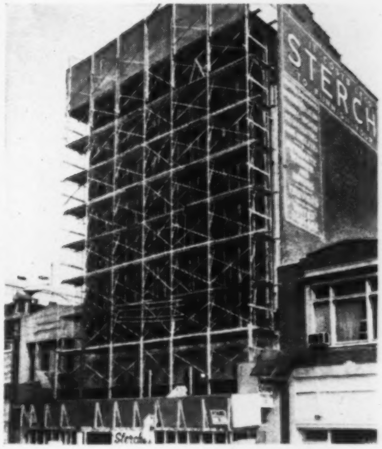


19-Story double hoist tower . . .

For fast lifting of materials during construction of Mercy Hospital, Baltimore, Consolidated Eng. Co., contractor, uses this 39-section, 253-ft. 6-in. high "Gold Medal"® Double Hoist Tower. "TubeLox" Scaffolding is used to make runways to each floor.

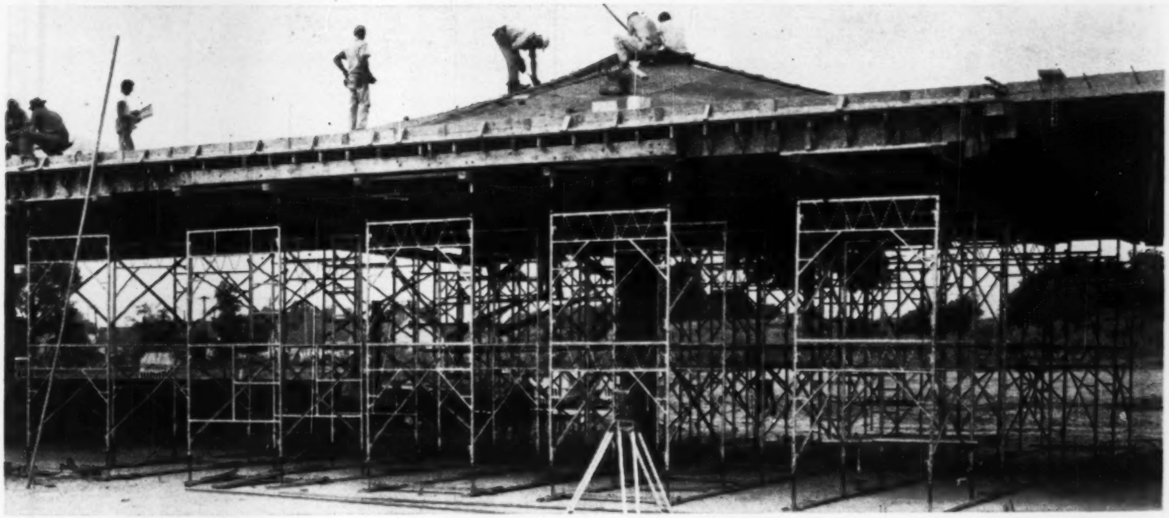
Refacing Scaffold . . .

To provide access to the entire front of Sterchi's Furniture Store, Charlotte, N. C., Foard Construction Co., contractor, uses 75 "Trouble Saver" Scaffolding frames. Planking erected on top of each row of frames provides working levels for refacing operations.



Hyperbolic paraboloid forming support . . .

This photo illustrates how easily "Trouble Saver" Shoring can be placed to support wood trusses which are used to form one of the many hyperbolic paraboloids on the new Government Employees Exchange building, Latham, N. Y. Two-frame high shoring towers, with sills attached, were slid from one paraboloid to the next.



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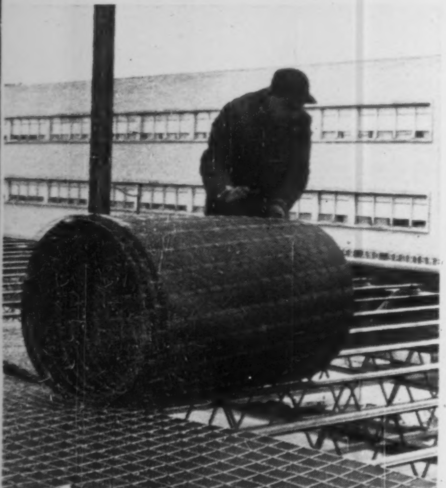
CIRCLE 105 ON READER SERVICE CARD

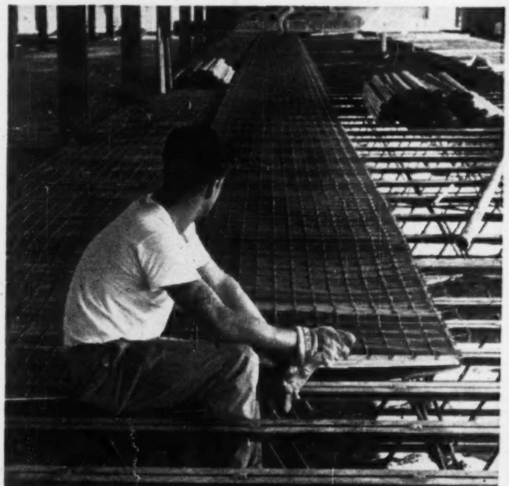
▲ IN NEWTON, MASS., 55,000 square feet of Steeltex were installed in floors of South Newton High School. Architect: Korslund, LeNormand & Quann, Inc., Norwood, Mass. Structural Engineer: B. C. Hryniewicz, R. E., of Symmes, Maini & Hryniewicz, Cambridge, Mass. Contractor: M. S. Kelliher Co., Boston.

IN PITTSBURGH, PA., 350,000 square feet of Steeltex were installed in floors of the North View Heights Housing Community. Architect: Mitchell, Ritchey, Douden & Simonds, Pittsburgh. Structural Engineer: Leland W. Cook, RPE, Pittsburgh. Contractor: Youngdahl-Crump-Psaty, Pittsburgh. ▼



◀ IN CLEVELAND, at National Cash Register Building, Steeltex is quickly unrolled by one man. Architect: Irving D. Robinson, Cleveland. Contractor: D. W. Rankin, Inc., Cleveland.

IN FOX CHAPEL near Pittsburgh, Steeltex is tightened over joists. At Fox Chapel Area High School 125,000 square feet of Steeltex were used on floors. Architect: Hunter, Campbell & Rea, Altoona, Pa. Contractor: Youngdahl-Crump-Psaty, Pittsburgh. ▶



'Wish We Could Use Steeltex On Every Job,' Says Contractor For $3-¼ Million School

"We're always happy when Steeltex is specified—wish we could use it on every job," said Joe Remaley, pointing to a 125-foot length of the paper-backed, wire mesh reinforcing stretched over steel joists.

"Just unroll it, cut to the length you want, tighten, clip to the joists, pour your concrete and forget about it. It's that simple.

"On top of that," he added, "you know you'll get a good slab reinforced where you want it with good galvanized mesh."

Mr. Remaley referred to use of Steeltex in Fox Chapel Area High School near Pittsburgh. Here 125,000 square feet of Steeltex provided form and reinforcing for floors.

Steeltex' ease of installation was emphasized by John Carey, foreman of the three-man J. C. Jackanic, Inc., installation crew.

Only two men in the crew had used Steeltex before. "But we found Steeltex very easy to install," Mr. Carey explained, "simply by referring to the instruction folder that comes with each box of clips."

- **Steeltex For High School** — In Newton, Mass., during construction of the $3 million South Newton High School, 55,000 square feet of Steeltex were installed in the floors.

Structural Engineer B. Chester Hryniewicz declared: "In preparing detailed cost analyses for different types of floor construction, I have found Steeltex with bar joists costs 35 percent less than conventional concrete slab and steel beam construction."

Leonard W. Quann, AIA principal in charge, added: "Here we had a tight construction schedule and weight was a factor, too, because most of the buildings were constructed on piles. As a result, Steeltex was chosen without question."

The architectural firm of Korslund, LeNormand & Quann was awarded a citation for this school by the American Association of School Administrators.

- **Steeltex For Housing Project** —Steeltex was commended also during construction of the $17 million North View Heights Housing Community for the Pittsburgh Housing Authority. More than 350,000 square feet of Steeltex are used in low-rent family units.

Joseph Slutsky, AIA, resident architect for Mitchell, Ritchey, Douden & Simonds, said: "You get good solid construction with Steeltex. The paper provides all the form you need while the mesh gives the proper reinforcing."

- **Steeltex For Office Building**— In Cleveland, Ohio, 32,000 square feet of Steeltex in the floors of the new National Cash Register Building drew this comment from Charles Nemec, the contractor's general superintendent:

"When properly installed, Steeltex can save up to 15 percent on concrete because it can be tightened over joists."

Architect Irving D. Robinson said he likes Steeltex because, in addition to reinforcing, it holds moisture, providing proper cure for concrete. "There's no concrete dripping through" he said.

- **Steeltex For College**—"Two men can form with Steeltex faster than six men can form with other materials," said W. D. Foulke, superintendent for Henry Shenk Co. during construction of the $1.5 million addition to Villa Maria College in Erie, Pa. Architect for the job: Nelson, Goldberg & Heidt of Erie.

More than 50,000 square feet of Steeltex were used in the floors. "Steeltex provides a substantial working surface, too," Mr. Foulke continued. "It speeds up concrete pouring and presents no problems in fitting around projections such as pipes and vents."

Whether your next construction job calls for a hotel, school or office building, you too can cash in—as these architects and contractors have. Contact the nearest Pittsburgh Steel Products Division sales office listed below for engineering help on your next job.

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▶ See Sweets Catalog Section 2g

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Chimneys Rise Through Water Tanks

Two British engineers, one pressed for space and one inspired by a coincidence, have arrived at the same unorthodox placement for water towers—up on the chimney.

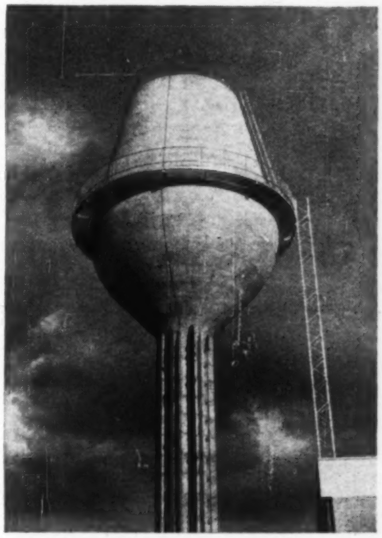
In the first case, at the South Eastern Gas Board's Isle of Grain Works, in Kent, England, designers had the problem of putting both a water tower and smoke stack on a space only large enough for one. They solved the problem by threading a 220-ft stack right up through a 150,000-gal tank. Both are reinforced concrete.

The mass of the tank on the lower part of the chimney reduces the overturning moment imposed by wind loads and, therefore, reduced the foundation cost. But differences in expansion made it necessary to build the tank and stack as two independent structures. The tank has its own interior wall and is connected to the stack only at its base, being free to expand upwards at its own rate. The tank rests on six columns integral with the stack. The designer-builder, Tileman and Co., Ltd., of London, estimates that there was no net saving in combining the structures.

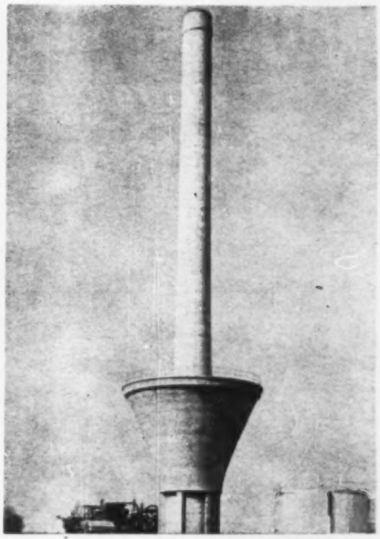
Even more radical is the design adopted at the new Dundonald Hospital at Belfast, North Ireland. It mounts a tulip-shaped, 100,000-gal tank at the top of a 107-ft stack.

In this design the tower is integral with the stack. Frederick Gibberd, the architect, was inspired by the need for a high water head that coincided with the necessary chimney height.

With the reinforced concrete tank at the top, foundation requirements were more severe. They were met with an octagonal footing 35 ft across and 6½ ft deep. The water tank is 51 ft high and 33 ft across at its widest outside diameter. Walls taper from a maximum thickness of 13 in. The reinforced concrete stack has a 7-ft inside diameter along its full height. Its wall is 6 in. thick. Eight 12 x 8-in. vertical fins along the outside of the stack give added support to the water tank. Cost of the combined structure was a little less than separate structures. Felix J. Samuely & Partners was the consulting engineer.



Belfast tank sits atop stack . . .



Kent tank is wrapped around it.

Milan Subway Tunnels Down and Out

A huge excavation pit in the square in front of Milan's famed Gothic cathedral, the Duomo, signifies that construction of the city's 23-mile subway network is well under way.

The $120-million master plan calls for four main subway lines, with completion scheduled for 1970. (ENR Oct. 13, 1960, p. 64.)

The subway tunnels will be 23.6 ft wide, which will allow 9.35-ft-wide trains to pass in either direction. The stations will be at average intervals of 1,935 ft, and the platforms will be 348 ft long. Each station of the Metropolitana, as the subway is called, will be able to service 40,000 passengers an hour in each direction.

The station in front of the cathedral will have three underground stories. Special construction precautions will prevent any possible weakening of the ground supporting the cathedral.

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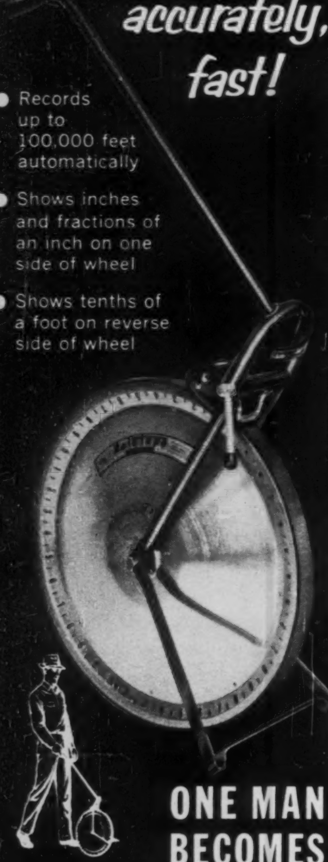

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CIRCLE 110 ON READER SERVICE CARD

Rail Line to the Arctic Gets Canadian Approval

Construction of a 438-mile railroad between Grimshaw, Alberta and Pine Point on Great Slave Lake was authorized by the government of Canada.

Routing of this line was a subject of great dispute, with a three-man Royal Commission producing three different reports (ENR Aug. 4, 1960, p. 15).

The line will connect the Northern Alberta Railway at Grimshaw with the site of a new lead-zinc mine being developed by Consolidated Mining and Smelting Co. of Canada Ltd. The line will be the first major change to the Mackenzie Valley water route to the Arctic in more than 16 years, and it will enable goods to be shipped directly from Great Slave Lake to the Arctic.

The Canadian government will pay up to $86.3 million for subsidizing the purchase of right-of-way and construction of the line for Canadian National Railways. Consolidating Mining and Smelting Co. will pay the government $20 million over a ten-year period. They will also pay CNR operating and maintenance costs annually.

Italian Combine to Build Argentine Gas Pipeline

An Italian consortium of state-owned and private companies will build a 1,056-mile natural gas pipeline in Argentina over the next five years. It will be the largest project with the longest credit terms ever financed in Latin America by a European country.

Built for Gas del Estado, an Argentine state agency, the 30-in.-dia pipeline will cost $201.6 million. When the line is completed, 190,000 hp of pumping force will deliver 13 million cu yd of gas a day from Santa Cruz fields in Southern Argentina to Buenos Aires.

Gas del Estado will pay $189 million in cash and put up around 40,000 tons of locally produced tubing, worth over $10 million. After a 3¼-year grace period, Gas del Estado will make monthly payments for 11¾ years at 7.2% annual interest.

Italian companies tied up in the deal are: SAIPEM, SNAM-Progetti, and Nuovopignone, members of the state-owned ENI (Ente Nazionale Idrocarburi); Finsider Metallurgy, member of the state-owned IRI (Instituto Ricostruzione Industriale); and private companies Fiat of Turin, and Marelli Lencurt and Ercole Marelli of Milan. The Mechanical member of the IRI group, Breda Co., of Milan, is also expected to join the consortium.

Leslie W. Sage
Secretary
AFIA
New York

Fire Insurance Overseas

Of La Paz, Bolivia, the world's highest (ca. 12,000 ft.) capital, a journalist wrote: "Her atmosphere is so rarefied that virtually the only purpose of the single municipal fire engine is to squirt indelibly colored water at political demonstrators." This is an isolated instance of the fire hazard abroad being less than normal; in most cases it is greater, for public fire protection does not everywhere meet U.S. standards.

To protect foreign investments as fully as possible, those who plan or run an overseas plant should install sprinklers, alarm systems, hydrants, extinguishers and train fire-fighting personnel. However, comparing the amortized cost with savings on insurance should not be the only reason to provide private fire protection, for the indirect cost of a fire can mean loss of position in a particularly important market.

Insurance legislation varies from country to country as to whether coverage must be obtained locally or can be bought anywhere. Also, the extent of the coverage provided in a foreign standard fire policy may not be as broad as the normal domestic contract in that fire resulting from a number of perils, such as earthquake, riot and windstorm is not included. Such protection has to be bought extra. In most places, a 100 per cent coinsurance requirement is mandatory. And the sometimes quite sizeable fees on policies and taxes on premiums imposed by many Governments are usually borne by the insured.

The men in AFIA's U.S. and overseas offices are prepared to discuss with your broker or agent your foreign insurance requirements. In most cases they can help in planning a program which may very well be instrumental in the success of your company's foreign operations.

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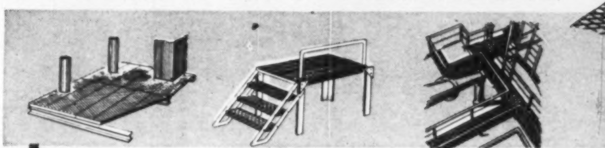

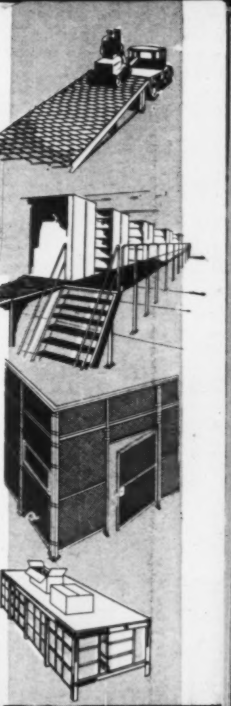

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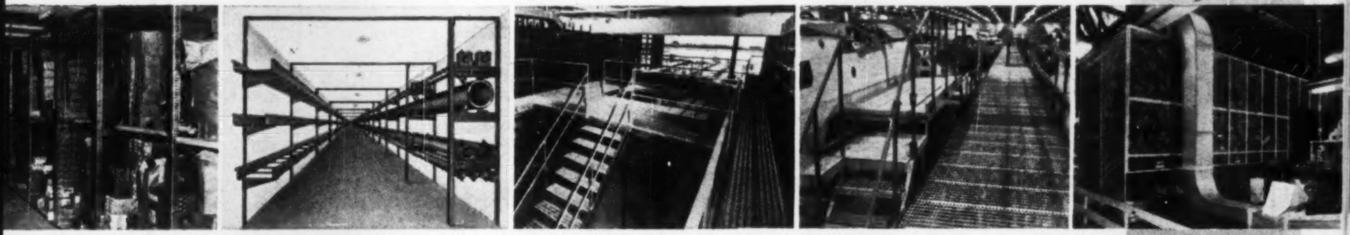

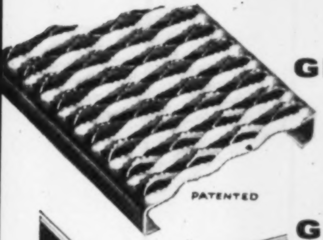

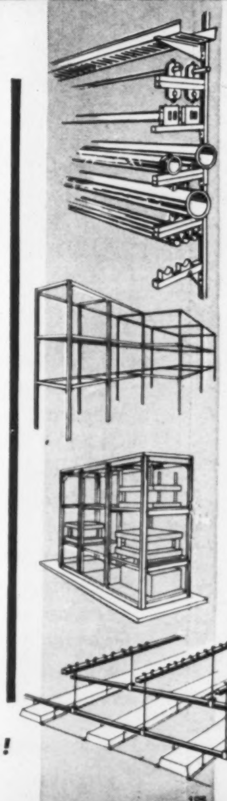

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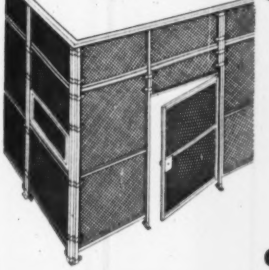

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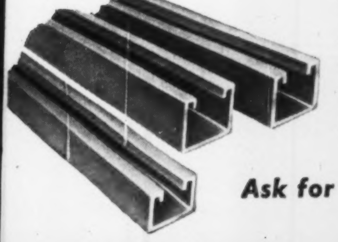

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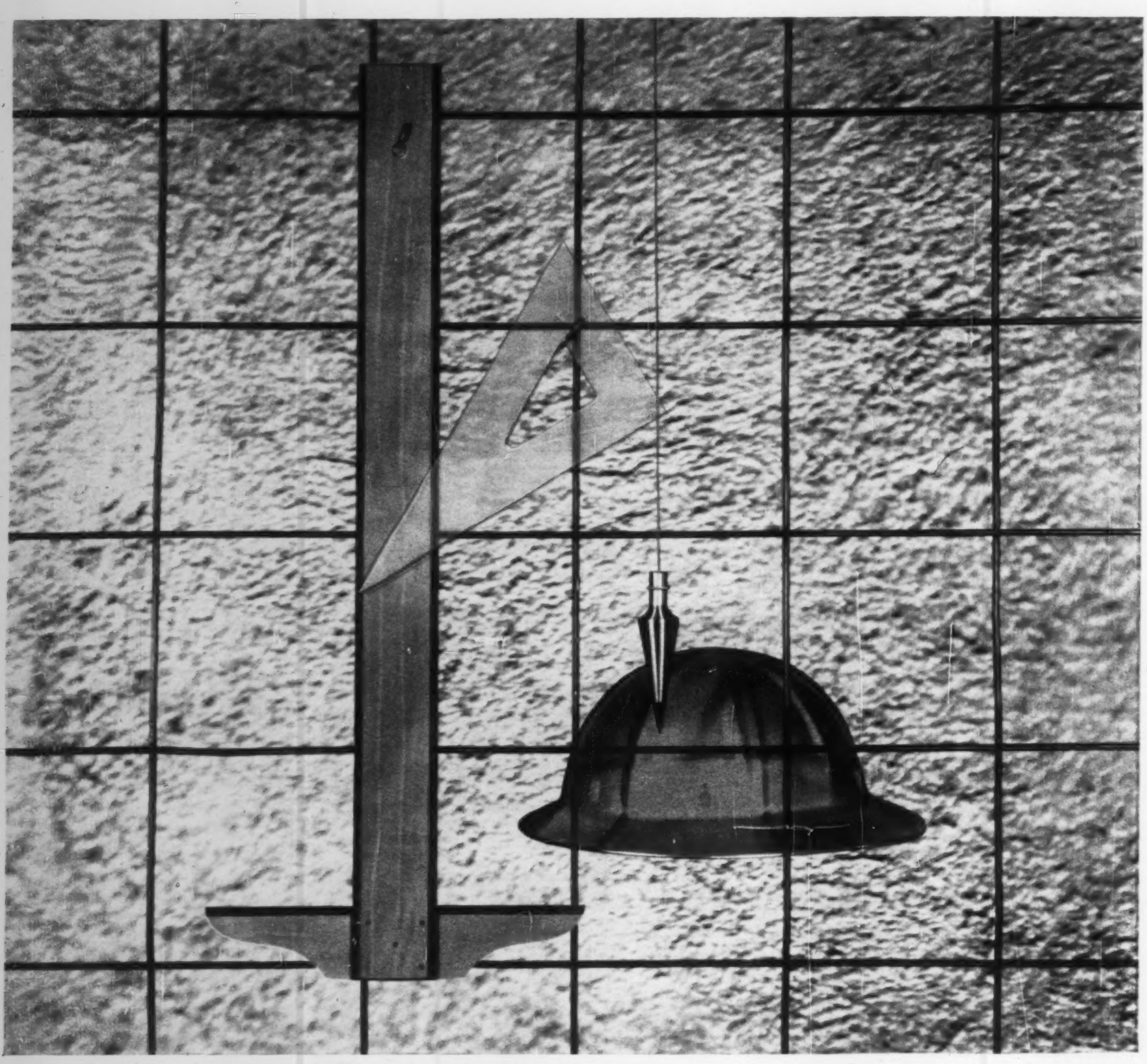

Tools of the trade

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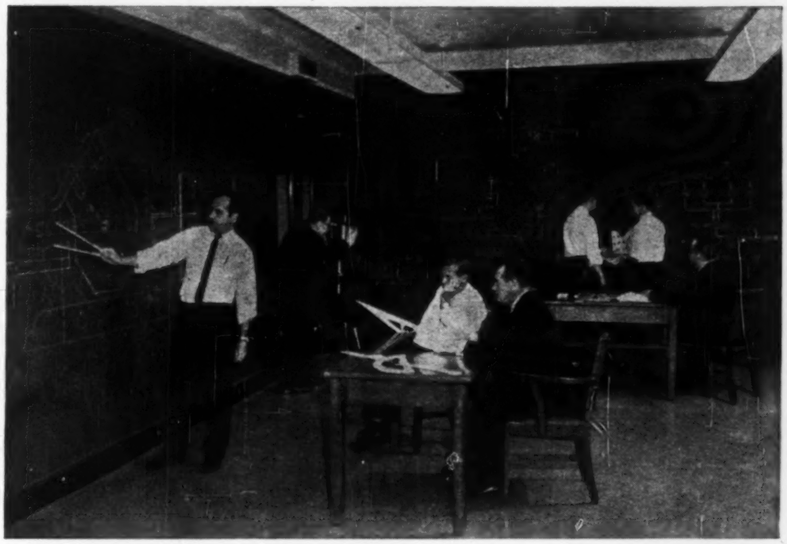
◄—CIRCLE 111 ON READER SERVICE CARD

CIRCLE 112 ON READER SERVICE CARD

Blackboards Cut Design and Drafting Cost



DRAWINGS THIS SIZE can be looked at and discussed by a design team.

Blackboards cover eight entire walls of a Chicago engineering office, and there isn't a drawing board in sight.

The Panoramic Design Technique, developed over the last five years by T A B Engineers, Inc., an automation engineering consulting firm, eliminates conventional drafting equipment. T A B develops designs on wall-sized blackboards and then photographs them.

Engineers and designers work collectively at a blackboard, each man assigned to design and draft one part of the project. Engineers and project manager can see the whole project at a glance without leafing through piles of drawings.

T A B makes full scale drawings on blackboards and uses plastic overlays for additional details. T A B doesn't enlarge the photographs, since pocket-sized prints are easy to read and judged more convenient to use than a standard drawing.

The 'brainstorming' approach stimulates the members to help one another improve their design, says H. A. Edmonds, vice president of T A B. Originally 78% of the company's engineering time was spent on layout, detailing and revisions. Using Panoramic Design Technique, drafting time is halved to 34%.

T A B engineers say that the blackboard technique can be applied to any engineering operation, including bridge and highway design.

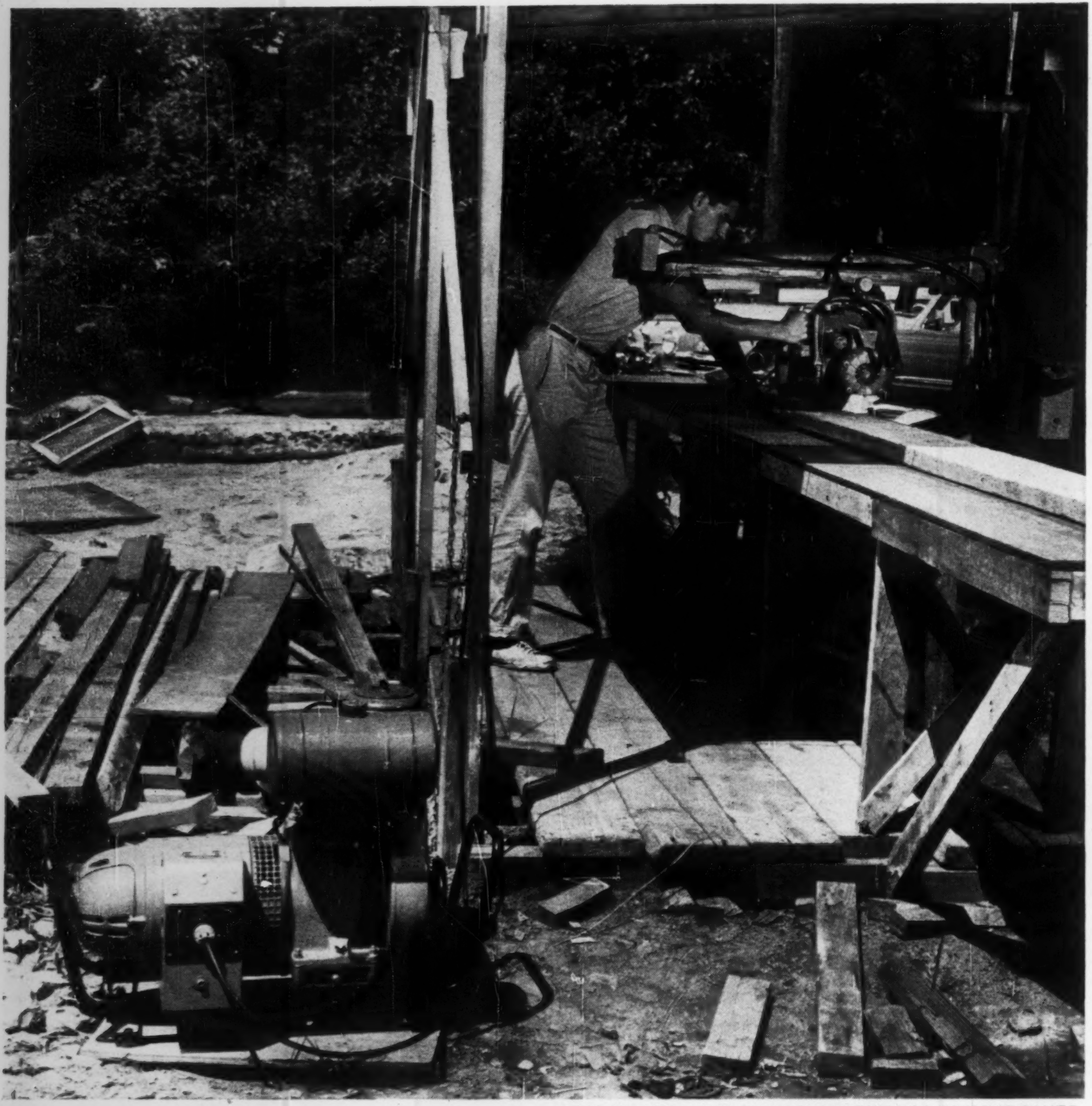
Bump Cutter Gives Spillway Close Shave

CONCRETE CUTTER rides the face of the spillway at Navajo Dam, smoothing it off.

A specially modified "bump cutter" is planing off every obstruction more than ⅛ in. high on the spillway of Navajo Dam in New Mexico. The machine was altered to work on a 1½ to 1 slope by Concrete Sawing Equipment Co., subcontractor for Morrison Kaiser-F & S, joint venturers on the project.

The motor of the machine, one of the original Concut Bump Cutters made by Concut Sales, Inc., was reset at an angle of about 45° to keep it from losing oil and burning out a bearing. A cable attached to the rear of the bump cutter leads back up to the top of the 1,100-ft spillway to a large dump truck, which winches the cutter up and down the spillway face. A telephone connection permits the bump cutter operator to signal the winch operator when to raise, lower or move sideways.

The width of the spillway flares gently from 138 ft at the top to 195 ft at the bottom. The bump cutter has a 17-in.-wide diamond cutter head. Closure should come next spring after final embankment placing. Completion is expected by late next summer, well ahead of the contract date of March, 1963.



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. . . Deck of Steel Railroad Bridge

The Ohio Department of Highways recently surfaced the deck of a railroad overpass with a cold bituminous mixture normally used in small quantities for industrial floors and similar applications.

Tracks of the Pennsylvania Railroad cross Interstate 71 at the line's Grogan Yards near Columbus, Ohio. A steel plate girder bridge built in three sections carries several sets of tracks over the road. The bridge has a steel plate deck.

The bituminous mixture—made up of portland cement, coarse sand, stone chips and Laykold Floor Mastic Binder—waterproofs the steel of the deck. The contractor, V. N. Holderman & Sons, Inc., Columbus, placed the mixture with a crown to provide adequate drainage. Thickness of the layer varies from 7 in. at the center to 2½ in. at the edges.

Above the bituminous mixture, designers placed a layer of 1¼-in.-thick asphalt plank. Ballast and tracks lie on top of the plank.

The contractor built a platform at truck level overhanging the underpass to expedite handling of some 33,000 gal of the cold binder.

The material is pumped from bulk transport trucks to a metering tank located on the platform. The material then flows by gravity into transit-mix trucks for mixing and delivery to the bridge deck.

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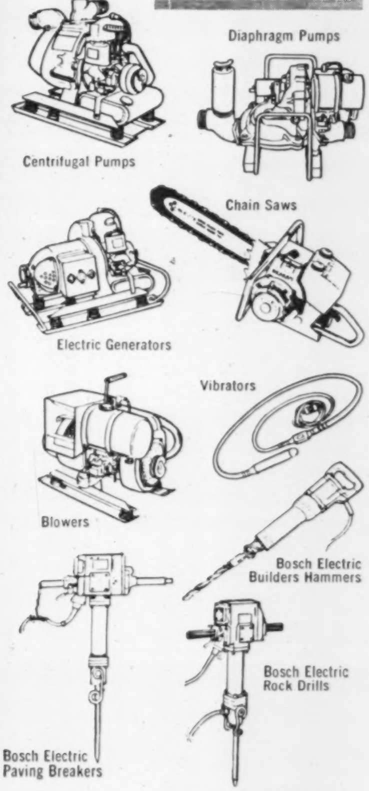
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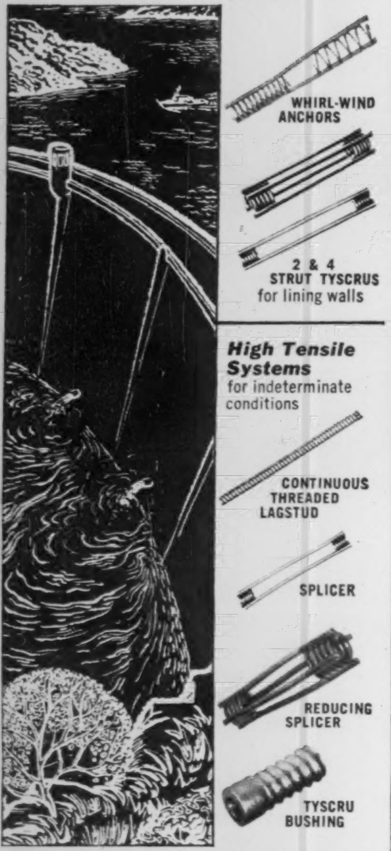
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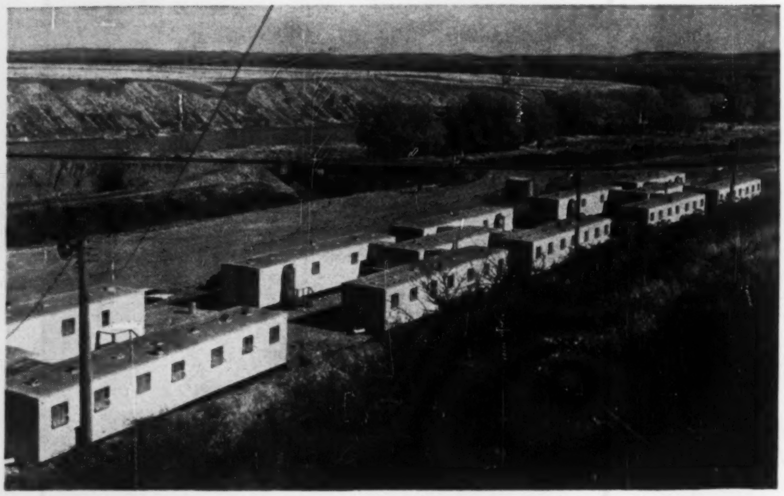


Construction Camp Follows Jobs

Unlike 'permanent' construction camps, which are generally knocked down and sold for scrap when the job is over, this one, at Yellowtail Dam in Montana, will follow the machinery on to the next job. It consists of trailers, specially made for Morrison-Knudsen Co., Inc., joined together in complexes that provide most of the comforts of home.

Each complex has four dormitory trailers grouped around a central lavatory trailer, all interconnected by enclosed walkways. Two of the four dormitory trailers are 42 ft long and contain four one-man rooms in each. The other two are 55 ft long, have seven one-man rooms. M-K has five dormitory complexes at Yellowtail and a five-trailer kitchen complex.

The kitchen complex has a dry storage unit, cold storage unit, cooking unit and two dining rooms. Cafeteria-style meals can be served to 84 men at a time.

M-K is also installing a 55 x 10 ft recreation-lounge trailer at Yellowtail. All the trailers were designed for M-K by Mobilease, Inc., and built by Alpine Industries, Inc., both of Boise, Idaho.

Plastic Pipe Pays in Alkali Soil

A water system for 152 farms in north-central Colorado uses pipes of rigid polyvinyl chloride plastic because of that material's resistance to the highly corrosive alkali soil that is found in the area.

Trucks used to bring water to each farm in the 24-sq-mile area until the Longs Peak Water Association was formed. With aid from the Farmers Home Administration, the Association put in a 26-million-gal earth fill reservoir and 28 miles of rigid PVC pipe.

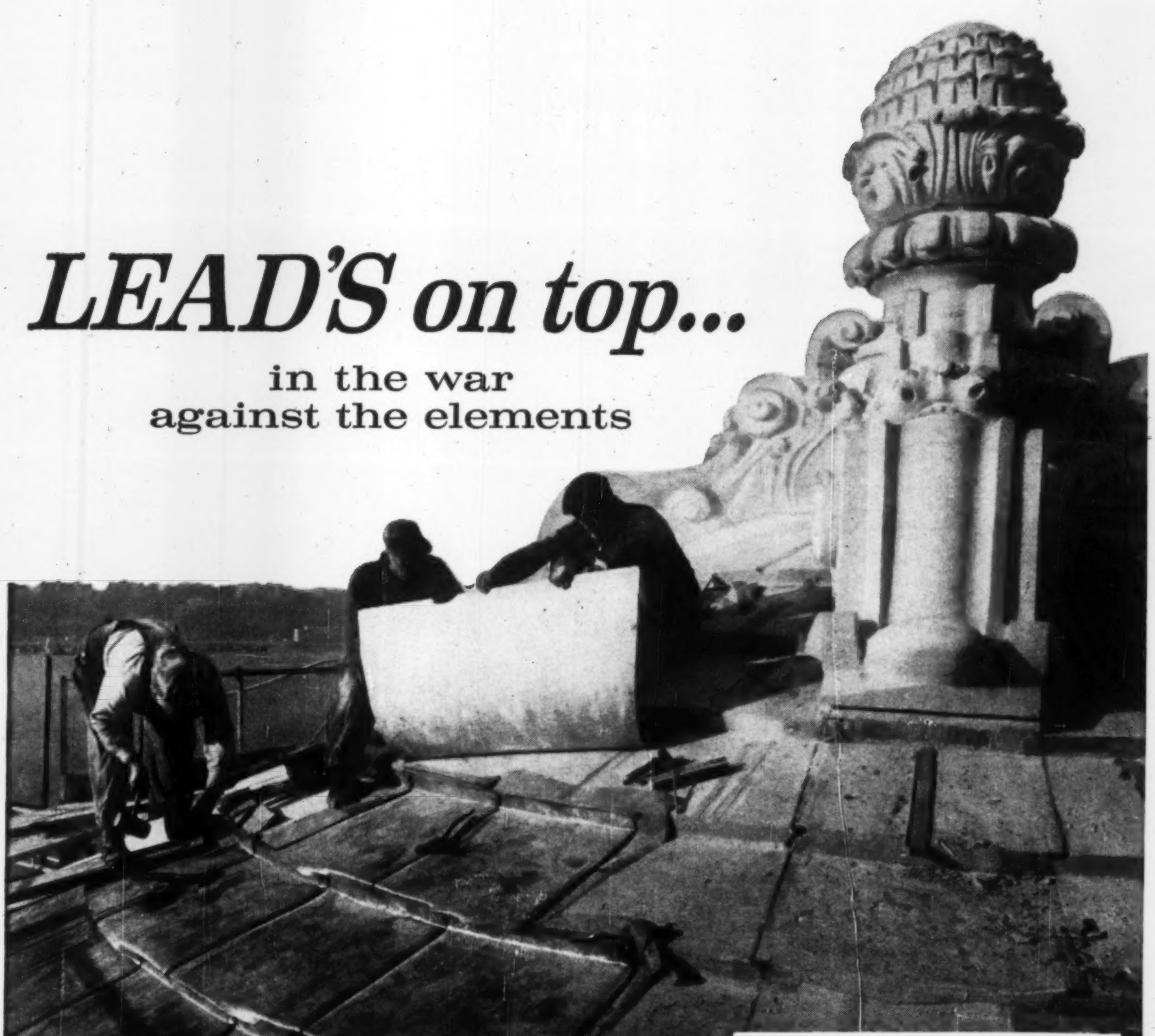
Pipe sections arrived in 40-ft sections. Field connections were made with a quick-drying liquid solvent and socket-type couplings. Eight diameters of pipe were used, starting with 8-in. pipe at the reservoir and graduating down to 1-in. pipe leading into each property.

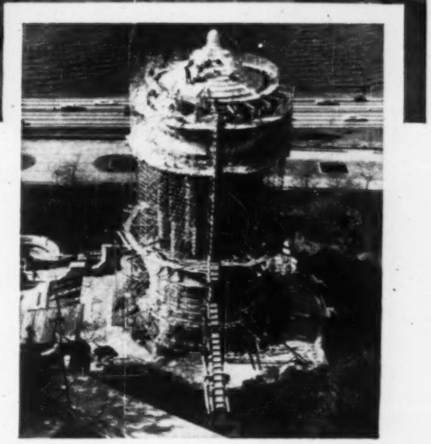
Cost of the entire system was about $280,000. Longs Peak Engineering Co., Longmont, Colo., designed the system. Installations was by C. & H. Contractors, Denver, using Koroseal pipe manufactured by B. F. Goodrich.

WATER MAIN serves Colorado farms.

LEAD'S on top...

in the war against the elements





On top of the Soldiers and Sailors Memorial Monument on Riverside Drive, roofing faces the wide extremes of New York weather, the relentless attack of city fumes.

Roofing of *lead* was selected by the monument-maintenance experts of the City's Department of Parks when complete refurbishing of the famous landmark began two years ago.

Responsible for over 600 monuments, these men are uniquely conversant with both the economic and aesthetic virtues of many materials. Their reasons for choosing lead: It will not stain adjacent stone, will develop a natural patina that improves with age. Because lead is flexible, it is easier and cheaper to install, conforming obligingly to irregular surfaces.

Most of all, lead *lasts*. It has a greater life expectancy than just about any building on which it might be installed. Note: the *hard lead* used today has added strength, permitting thinner, lighter sheets while retaining the traditional qualities of lead in construction.

If you're looking for roofing that "takes it"—for any kind of building large or small—by all means look into lead. For more detailed facts or technical assistance, write Lead Industries Association, 292 Madison Ave., New York 17, New York.

LOOK AHEAD WITH LEAD

3169

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SS-13 IS APPLIED from tank cars, tank trucks or 50-gallon drums at outside air temperature. Here SS-13 goes into the 3,300,000-gallon pond on Moon Valley Golf Course, Phoenix, Arizona. Before treatment pond lost 500 gallons per minute through seepage. After treatment, loss dropped by 72% to 140 gallons per minute. Greens Superintendent James H. Snyder says water savings paid for treatment in 60 days.

SOIL SEALER-13 SAVES WATER

SOIL SEALER-13 (SS-13) is a liquid compound of resinous polymers and heavy atoms carried in a small proportion of common diesel fuel ● It is miscible with water ● SS-13 is designed primarily for application to sandy, alkaline soils which still leak after maximum compaction under field conditions ● When mixed with the water held in earth reservoirs such as stock tanks, contractors' storage ponds and golf course water hazards, SS-13 reduces seepage by from 60% to 90% ● It is generally applied at a rate of 1 gallon of SS-13 for each 1,000 gallons of water ● It is also effective in sealing irrigation canals ● Cost of application runs between 6 cents and 40 cents a square yard ● SS-13 is approved for the Agricultural Conservation Program Service of Arizona ● SS-13 seals soil by increasing the ionic attraction of soil particles for water which in turn increases the thickness of the hygroscopic envelope of water around each particle ● This reduces the size of the voids through which water can seep ● SS-13 is harmless to humans and animals, but, while in solution, is harmful to fish. ●

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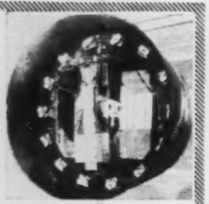

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CIRCLE 16 ON READER SERVICE CARD

Prepainted Conduit Cuts Mill Construction Costs

Factory coloring of electrical conduit resulted in cost savings in construction of an 80-in. hot-strip mill for Great Lakes Steel Corp., at River Rouge, Michigan. Usually, conduit is painted after installation.

Because an electronic computer regulates mill operations, a vast electrical network is required both inside and outside the plant. About 1.5 million lb of color-coded conduit had to be installed. Sizes range from ¾ to 4 in.

Much of the inside conduit runs 50 ft above the floor, sometimes in clusters and bends that are difficult and time consuming to paint.

So the electrical contractor, Harlan-Triangle Electrical Companies of Detroit, ordered factory-painted conduit.

The galvanized, rigid steel was coated with pigmented polyvinyl, applied by immersion, then baked. Flat-bed and fork-lift trucks delivered the conduit in straight bundles, weighing 2,000 lb each. About 25% of the conduit later was bent on the job.

The River Rouge plant has a capacity of 3,600,000 tons a year. It rolls steel slabs up to 12 in. thick into strip and coils.

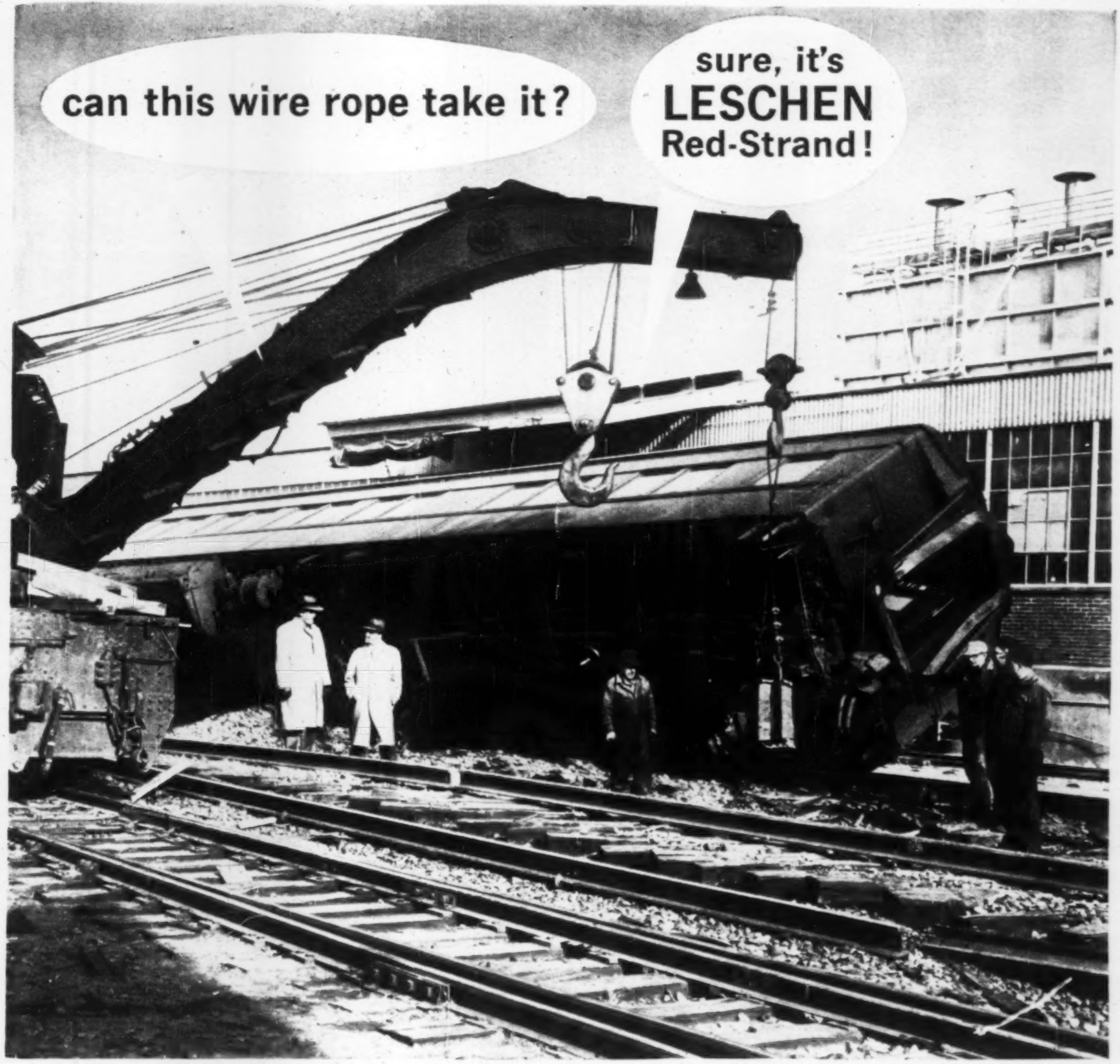
Heating System Cuts Costs By Storing Internal Heat

Three centrifugal heat pumps and six hot-water tanks collect and store the heat generated by people, lights and machines, to warm a 240,000-sq ft plant in Huntington, Ind.

The units supply the year-around heating and air-conditioning needs of a new $5-million publishing and printing offices of OUR SUNDAY VISITOR, a weekly Catholic newspaper.

In winter, the system takes the internal heat generated by people, lights and machines and distributes it to outside wall areas where heat loss is greatest. The heat pumps store any excess heat in the hot water tanks, until needed. In summer, the system exhausts interior heat and supplies chilled water as conventional heat pumps do.

Bevington, Taggart and Fowler, an Indianapolis engineering firm, designed the system for a summer cooling load of 855 tons with water at 45 F, and a winter capacity of 5,500,000 Btu per hour with water at 130 F. Completely automatic, the system also facilitates the printing process by reducing the amount of paper shrinkage and expansion that temperature and humidity changes often cause. Carrier Corp. supplied the heat pumps.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sure, it's LESCHEN Red-Strand!

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this new power-shift transmission

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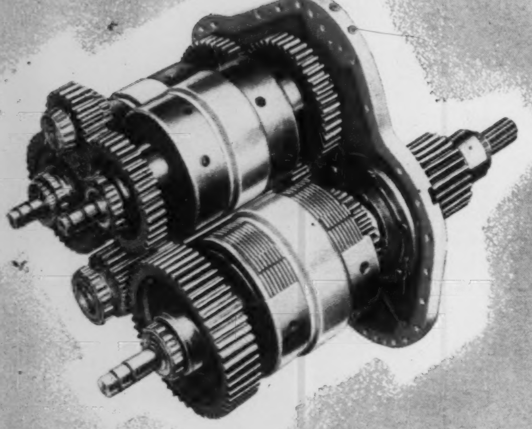
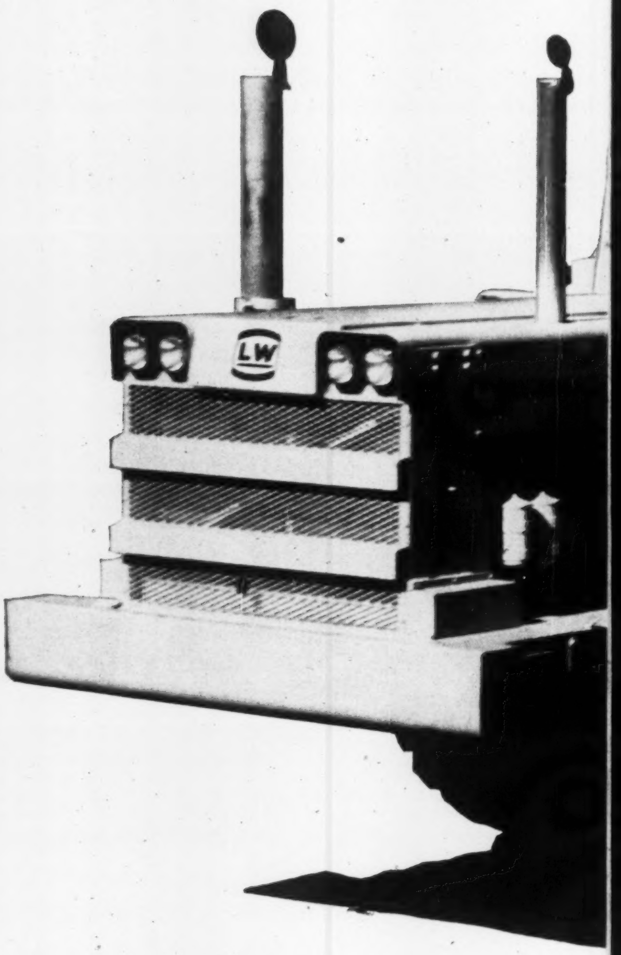




NOW YOU CAN CHOOSE your LeTourneau-Westinghouse B Tournapull® with either Fuller step-gear transmission (with LW High and Low Range) . . . or all-new *LW-designed-and-built* POWERFLOW 700 transmission. It's a constant-mesh, countershaft-type unit with full power-shift and torque converter . . . extremely simple, reliable, proven in over two years of testing.

No "shift-shock"

Because double-acting clutches in the "700" *cannot* engage simultaneously, you'll never have gear "overlap" or "underlap", therefore never be troubled with "shift-shock". Wet-disc range clutches engage hydraulically by means of manually-operated rotary valves.

Cooler running

Pressurized "mist"-type lubrication reduces amount of oil within the case, therefore minimizes heat-load common to splash or cover lubrication. All transmission oil is filtered and cooled, with throw-away filters.

8:1 ratio and QUIET

The 8:1 ratio spread of the "700" is the widest in the industry. You will find it exceptionally *quiet*, too, because ground spur gears, mounted next to bearings on large-diameter shafts, are used throughout..

Rear-mounted for accessibility

You won't often have to work on *this* transmission, but when you do, you will find it easy. It's rear-mounted, for fast, "walk-up" accessibility and removal.

Automatic lock-up

For dollar-saving "straight-drive" operation at higher speeds, the "700" features *automatic* lock-up. An extra: the lock-up clutch also engages automatically when hydraulic brake is applied, so that *engine* braking power is added to that of the hydraulic brake.

Gear-coupled torque converter

For easy installation and removal, the "B's" torque converter is gear-coupled. It offers integral sump design, plus Full-Flow filtration of all converter fluid. It has a stationary stator, to eliminate "over-riding clutch".

...plus these other

6,000 lbs more payload capacity;
5,000 lbs less "deadweight"

Capacity of the "B" is now 25 cu yd struck, 32 cu yds heaped, and 37 tons. That's 3 tons more than previous models. Yet, because the yoke, apron, and structural members of the Fullpak® scraper are now made of lightweight high-tensile-strength steel, the "B" weighs almost 5,000 lbs less than before! With its GM 12V-71 diesel producing 430 hp at 2100 rpm, you enjoy the snap and power of the *best* power/weight ratio of any scraper of this type and size.

Your LW Distributor has the complete story of these B 'Pull improvements. He can show you how they can work for you . . . for lowest-net-cost-per-yard. See him now.

IN TODAY'S BIG YARDAGE B 'PULL*

new production-boosters:

Dry type air cleaners

Most effective air induction system available! Two-stage filtration provides long element life, and first-stage element *cleans itself*.

Single-motor control of apron, bowl-hoist

One motor and a new cable-control unit now operate both your apron and bowl-hoist. This reduces generator loads, reduces service and parts requirements.

Feather-touch lever controls

Your operator now controls scraper work-motions with three "fast-grasp" knobbed levers that move forward and back swiftly, with "feather touch" instant "feel-of-load" response.

You will find many *more* improvements in the B Tournapull. A new tailgate design that speeds loading. New "straight-up" scraper side-sheets that make it impossible for rocks to lodge between sides and scraper arms. New safety latches with automatic "cut out". More than a dozen "maintenance speeders".

*Trademark BP-2486-DC-2

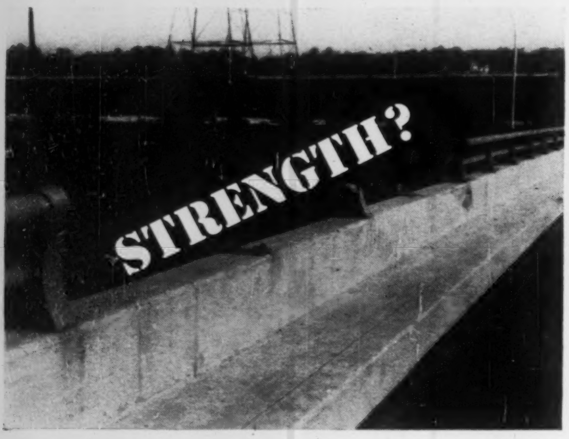
LW

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILL.

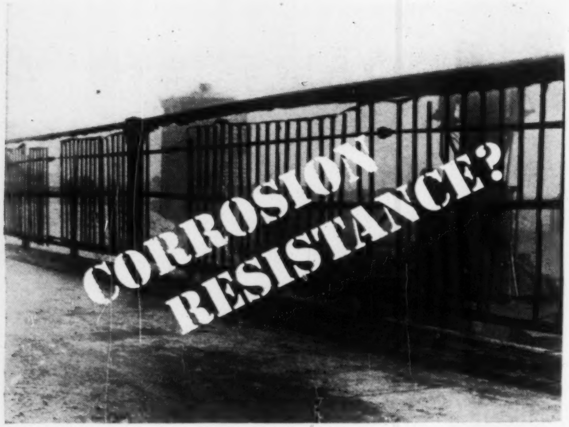
A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

CIRCLE 121 ON READER SERVICE CARD



Section of aluminum railing was bumped over the bridge when struck by an automobile in Baltimore.



This steel railing failed after only eight years' service on the Clark Avenue Bridge in Cleveland, Ohio.

ONLY WROUGHT IRON BRIDGE RAILINGS

give you Strength · Corrosion Resistance · Beauty

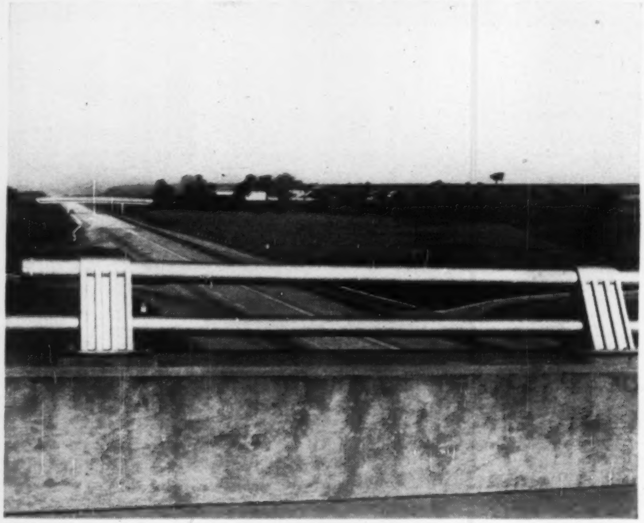
A good bridge railing must have both durability and strength. One without the other can decrease safety or increase maintenance costs drastically.

Wrought Iron meets both of these conditions and offers many other advantages in terms of fabrication and installation. Wrought Iron's structural strength gives it *high impact* resistance. Important, too, is Wrought Iron's *resistance to corrosive atmospheric conditions.*

Wrought Iron has design flexibility to meet the requirements of modern bridges. In addition to Wrought Iron pipe, many bridges are constructed from Wrought Iron components such as plate, bars, rounds, and other miscellaneous shapes. It can be fabricated into easily erected units because of its ease of threading, bending and welding. Once installed, Wrought Iron railings offer clear views through streamline design.

As for *beauty*, look at any old Wrought Iron bridge railing—be it along some country road, or across some river. Perhaps you have seen the beautiful handrailings in New Orleans. Wrought Iron's beauty speaks for itself.

Our bulletin "Wrought Iron Bridge Railings" contains illustrated case-history reports. Write for a copy. A. M. Byers Company, Clark Building, Pittsburgh 22, Pa.



This smart-looking Wrought Iron railing was installed on a throughway bypass bridge in Pennsylvania.

A. M. BYERS COMPANY

PIPE PRODUCTS: Wrought Iron • PVC • Steel
ROLLED PRODUCTS: Plates, Billets and Bars • Wrought Iron, Stainless and Alloy Steel

New Products

Pneumatic Shelter Offers Glass Walls, Truck Doors

The Eastern Air Structure is an air-supported shelter made of two quarter-spheres and as many 20, 40 or 60-ft sections desired. The two quarter-spheres joined together form a 50-ft-dia shelter, and when combined with center sections, they form shelters over 100 ft long. Peak inside clearance for round and elongated models is 25 ft.

The shelter's basic 5.5-oz nylon fabric will admit enough daylight so that artificial lighting is not needed in daytime. According to service needs, vinyl, neoprene or hypalon coatings protect the basic fabric.

Special aluminum-framed glass windows, 7 ft high and 6 to 9 ft long, are optional. Special doors offered include the zip-flap, the framed personnel door, revolving doors and a double-swinging entrance for fork-lift trucks. An air-lock vestibule is also available, for enclosing a truck while loading and unloading.

External lashing rings allow the shelter to be deflated and secured, tarpaulin fashion, around materials that must be stored for a long time.

Inflating blowers can vary in power source, and need maintain only 0.04 psi. Eastern Marine Products Corp., 30 Garden St., New Rochelle, N.Y.

Big Gas Boilers Designed To Fit Small Spaces

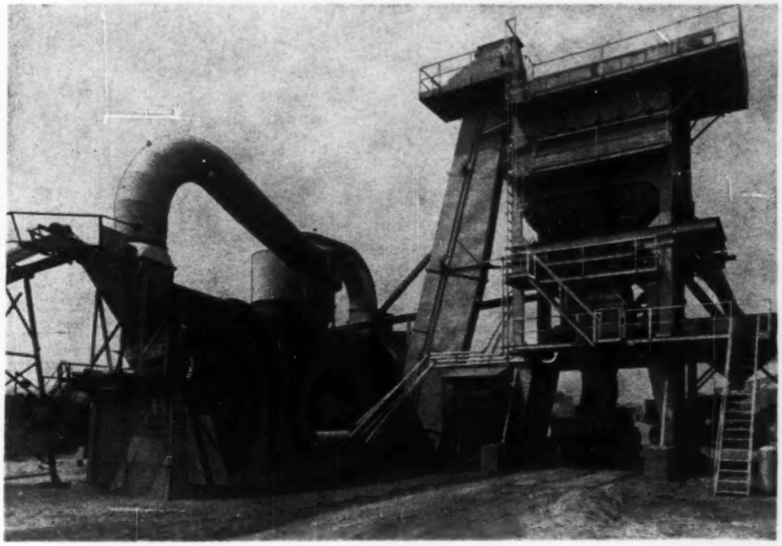
The Beaver line of gas-fired, hot-water boilers comes in 16 compact sizes, ranging in capacity from 200,000 to 3,000,000 Btu per hour. The largest unit measures 95 x 42 x 63 in. high.

All cabinet sides are removable and all burners slide out. Cabinets are of 18-ga steel, with bases of 12- and 14-ga. The circulation system will not permit reverse flow of water.

This packaged Beaver line incorporates a new burner that offers on-off firing or high-low firing. Fuel and oxidizer ports of the burner are manufactured to tolerances of 0.001 in. Enclosed controls include the electric gas valve, aquastat, gas-pressure regulator, gas shut-off valve, and an ASME-rated relief valve.

The pilot safety valve and a combination thermometer and altitude gage are the only exposed controls.

These factory-insulated boilers meet the requirements of the ASME boiler code, stress and capacity tests of the American Gas Association and Hartford Steam Boiler Insurance Co. The Canadian Gas Association also has approved the line. Cleaver-Brooks Co., 326 E. Keefe Ave., Milwaukee 12, Wis.



Asphalt Plant Has Ground Controls

A 10,000-lb batch capacity asphalt plant that can be operated from ground level has automatic controls, for cold aggregate feed, dryer burner firing and tower batching.

The plant LIMA Madsen Model 581, is rated at 300 tons per hour at a 60 second charge-mix-discharge cycle. Truck-to-truck mix specification changes are made without loss in cycle time. Four or five compartment bins store hot aggregates up to a 100-ton capacity.

The weigh box has a struck capacity of 217 cu ft and a working capacity of 100 cu ft.

The mixer has 163 gross cubic feet, and there is 200 sq ft of actual screening area, provided by a horizontal double deck vibrating screen and an added split deck.

The plant has a cyclone type dry collector and a wet type secondary collector which the manufacturer says assures dust free operations.

Other features of the asphalt plant are individual overflow and reject compartments, and a separate power unit for the dryer. It also has unit construction for fast field assembly or disassembly. Baldwin-Lima-Hamilton Corp., Construction Equipment Div., Lima, Ohio.

Water Detector Is Lightweight

The Goldak Model ML-61 is a handy device for detecting water leaks under dirt, pavement, concrete, wood and other surfaces.

It is designed for use by plumbing contractors, water works and industrial maintenance personnel.

The detector weighs 20 oz. It is 5x1¾x2⅛ in.

A one-inch-square Rochelle Salts crystal microphone used in the detector has a special mounting assembly that accepts leak vibrations and minimizes extraneous sounds. An electronic filter circuit assists the operator in detecting only the leak noise.

The battery supply consists of four standard 1½-volt cells. Goldak Co., Inc., 1544 West Glenoaks Blvd., Glendale 1, Calif.

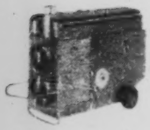
AUTOMATIC TEMPERATURE CONTROL NOW COSTS YOU LESS

NEW! HERMAN NELSON HEAT GENERATORS

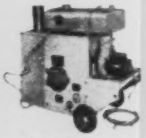
Hurry up heat when you want it—volume air circulation • Engineered for safe, quiet operation • Automatic ignition, automatic temperature control • 16 hours continuous operation • Burn kerosene, #1 or #2 fuel oil • Stainless steel combustion chamber • Controls and handle on cool end of machine • Complete combustion—no fumes, smoke or open flame • Use wherever you need quick, safe portable heat. A DEMONSTRATION WILL CONVINCE YOU!

Unique swirl combustor—maximum fuel economy.

America's most complete line



DE LUXE Fully automatic; the finest air heater-blower you can own. Up to 450,000 BTU.



UTILITY Interchangeable gasoline engine or electric motor. Up to 425,000 BTU.

HN 850 125,000 BTU

HN 2250 300,000 BTU

Removable power pack for easy servicing.

AAF herman nelson

FREE: SEND FOR INFORMATION ON COMPLETE LINE AND OPERATING TIPS.

American Air Filter Co., Inc.
Portable Products Dept. ENR-5, Louisville 8, Ky.

NAME ____________
COMPANY ____________
ADDRESS ____________
CITY ____________ ZONE ______ STATE ______

Mobile Batchers Have Interchangeable Parts

Six mobile concrete batching plants have interchangeable components so that production and holding capacities can be readily expanded.

Offering capacities between 20 and 100 cu yd, the batchers can also be varied by add-on installations of automatic batch controls, recorders and other accessories.

Each component section mounts on permanent tires for towing by a highway tractor. Nominal road dimensions are 13 ft 6 in. high, 8 or 11 ft wide, and 40 ft from kingpin to the rear end.

Installation (at the factory) of motor drives, loading and batching mechanisms, water and air connections permits fast set-up, usually in less than four hours. All plants are designed for one-man operation. ERIE STRAYER CO., RUDOLPH AVE. AND NKP RR, ERIE, PA.

Diverse Industrial Needs Tailor Air-Handling Line

The Acme line of air-handling equipment has been updated to meet varying industrial and commercial needs better.

These handlers heat or cool air, remove dirt, humidify or dehumidify, or serve as simple air circulators. Steam or hot water can supply the heat source, and a water chiller or a direct expansion coil can serve as the cooling source.

The current product line is composed of 14 horizontal units, 12 vertical, 11 multizone and 19 individual zone units. Capacities range from 600 to 44,000 cfm, at a nominal outlet velocity of 1,600 fpm.

Coil sizes vary; mounting can be left or right handed. And four fan discharge and six motor positions are available. ACME INDUSTRIES, INC., JACKSON, MICH.

Self-Propelled Trencher Cuts to 36-in. Depth

Davis W-36, a utility trencher, has a 6-hp Briggs & Stratton power engine and a self-propelled six-speed winch drive. It operates at speeds up to 500 ft per hour.

It trenches from three-in. to six-in. wide and to a maximum depth of 36 in., with a self-locking depth control. And it has a built-in protective torque limiter that disengages when a shock load is met. Backfill is easy with the W-36 because the spoil is diverted to one side, says the manufacturer.

The trencher also has a complete staking kit—the main stake, a deadman stake and guy line. DAVIS MFG. INC., 1500 S. MCLEAN BLVD., WICHITA 13, KANSAS.

ON GUARD IN INDEPENDENCE SQUARE

About 75 feet away from Independence Hall, in the park to the south, stand R. D. Wood Hydrants like sentinels on duty. While their proximity to the Nation's most revered historic monument does not necessarily imply endorsement, we nevertheless like to think of them there, on guard night and day against the fire that could destroy what Gen. Howe saw fit to spare, and Clinton too, in the British occupation. But R. D. Wood Hydrants need no endorsement. For over a century they have shown themselves to be in constant readiness for any emergency. Of simple, ingenious design and rugged construction, R. D. Wood Hydrants are protected against ice and sediment—function smoothly when the engines arrive. There could be no better protection for any community than R. D. Wood Hydrants—and there could be no better protection for the birthplace of the U.S.A.

Conform to A.W.W.A. specifications

R. D. WOOD COMPANY
Established in 1803

FLORENCE
NEW JERSEY

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds)

Now . . . NEW!

An "INDEX TO SPECS!" on asphalt and asphaltic products

A condensed library of facts for ready reference whenever you need information on the use of asphalt, Bitumuls® (emulsified asphalt), or Laykold® specialty products.

Use the handy coupon, below, to order your copies of these index cards. No obligation, of course.

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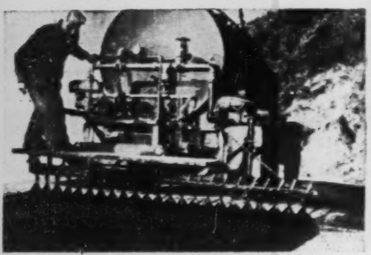
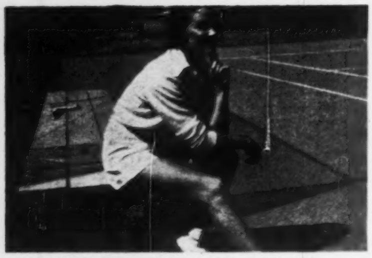
ASPHALT for all types of paving and surfacing



BITUMULS for base mixes, and for surfacing and sealing of pavements—



LAYKOLD specialty products; tennis courts, playgrounds, mastic floors, etc.

American Bitumuls & Asphalt Company
320 Market St., San Francisco 20, Calif.
Perth Amboy, N.J. Baltimore 3, Md.
Cincinnati 38, Ohio St. Louis 17, Mo. Oakland 1, Calif.
Atlanta 8, Ga. Tucson, Ariz. Inglewood, Calif.
Mobile, Ala. Portland 8, Ore. San Juan 23, P. R.

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☐ LAYKOLD SPECIALTIES

Name..........
Firm.......... Title..........
Address..........
City & State..........

. . . New Product Briefs

Conduit Fittings

Condulet Mark 9 series, die-cast copper-free aluminum fittings, are lighter and have more internal space than previous models. Other design changes include self-retaining cover screws, longer hubs for wrench grip, full-cut threads and integral bushings. CROUSE-HINDS CO., SYRACUSE 1, N. Y.

Floor Surfacer

Heavy-duty, plastic floor surfacer for concrete, wood, metal or brick decks. Stonclad requires only clean base surface and trowling to apply. No preroughing. Resists acids, salts and greases. Forms traffic bearing surface. STONEHARD COMPANY, 401 N. BROAD ST., PHILADELPHIA 8, PA.

Prestressing Bars

Special-grade Stressteel bars for prestressing concrete have minimum ultimate strength of 160,000 psi (compared with 145,000 psi for regular grade). Yield stress at 0.2% offset is 140,000 psi. Bars are available in diameters from $\frac{3}{4}$ to $1\frac{3}{8}$ in. STRESSTEEL CORP., 221 CONYNGHAM AVE., WILKES-BARRE, PA.

Dust Density Meter

Small meter reads directly in percent of light reflected from filter-paper. Built-in transformer to insure constant intensity of light source. Weighs $8\frac{1}{2}$ lb. GELMAN INSTRUMENT CO., CHELSEA, MICH.

Underwater Flare

One- or two-minute flares, ignited by battery, give 150,000 candle power for underwater exploration or examinations. SPECIAL SERVICES, INC., 16830 W. PLACERITA CANYON RD., NEWHALL, CALIF.

Air Compressors

A new line of air compressors, both air-and water-cooled types. One model has motor and compressor mounted above air tank. JACUZZI BROS. INC., RICHMOND, CALIF.

Air Filter

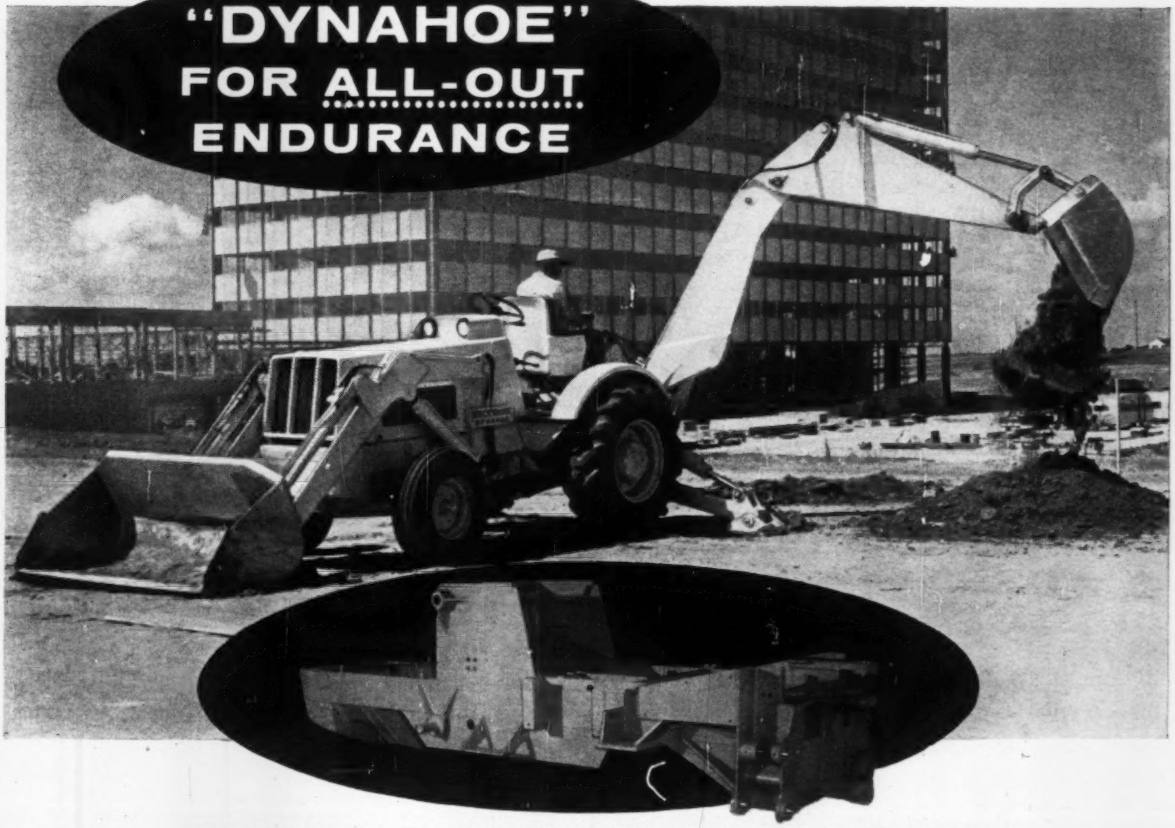
Oil-wetted, automatic air filters for large velocities. Capacities from 3,720 cfm to 130,500 cfm. AIR-MAZE DIVISION, ROCKWELL-STANDARD CORP., 25000 MILES AVE., CLEVELAND 28, OHIO

Relief Valve

Relief valve operated by spring attached to pressure diaphragm. Release point adjustable up to 300 psi. For gas, oil or water under 180 F. WARD WILLIAM & CO., 2095 U. S. HIGHWAY 22, UNION, N. J.

Economy Surveying Instruments

Two transits and two levels in a line of economy priced surveying instruments for small contractors, landscapers, farmers. KUEFFEL & ESSER, THIRD AND ADAMS ST., HOBOKEN, N. J.



"DYNAHOE" FOR ALL-OUT ENDURANCE

THE MASSIVE FOUNDATION FRAME
for great over all strength

Built-in structural strength of the "DYNAHOE" assures the owner the opportunity to consistently produce more yards per hour—day after day, month after month, year after year.

WORKS as a complete machine

This single unit, COMPLETELY INTEGRATED Loader-Tractor-Backhoe, is constructed around a massive foundation frame. Great strength, centralized in this frame, extends throughout all components . . . gives the "DYNAHOE" unequalled ability to perform the functions of a Loader-Tractor-Backhoe.

WITHSTANDS heavy work loads as a complete machine

The possibility of unequal force absorption by any one component is eliminated . . . stresses and strains are evenly funneled throughout the entire machine. Nothing shakes loose under the toughest operating conditions because there are no bolted-on attachments.

OPERATES as a complete machine

Contractors find that the "DYNAHOE" is fully stable when operating even under the toughest conditions—that there is minimum downtime—that the "DYNAHOE" possesses endurance and has long life never before equalled.

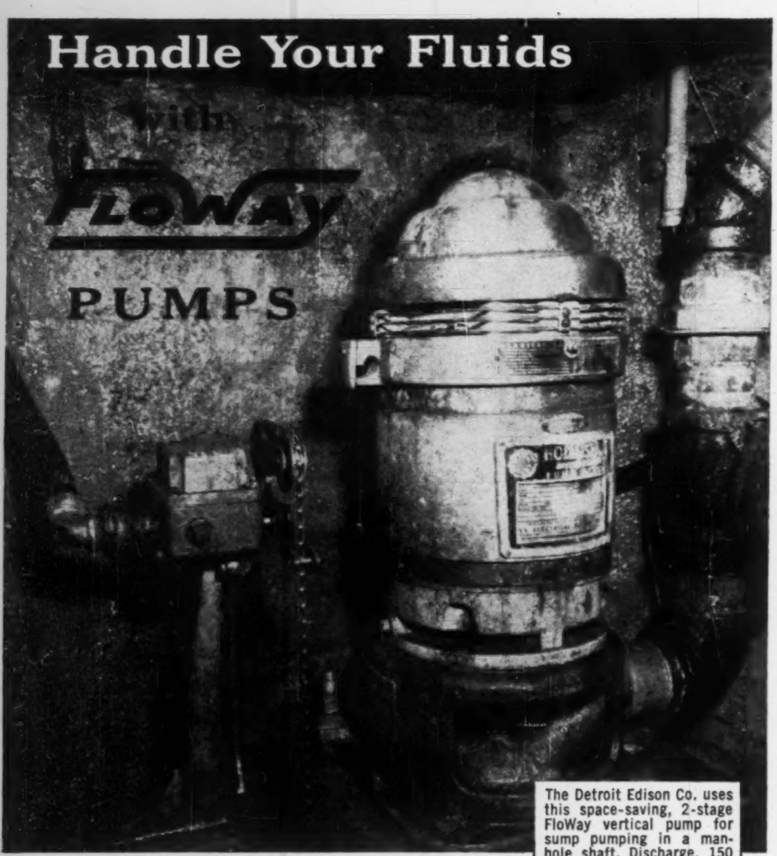
The "DYNAHOE" is perfectly balanced in every capacity . . . it digs as a completely balanced machine . . . it loads as a completely balanced machine . . . it backfills as a completely balanced machine and travels from job to job as a completely balanced machine.

"DYNAHOE" is available in gasoline and diesel models.

DYNAHOE

For full information on "DYNAHOE" or for the name of your nearest Distributor, write

MANUFACTURED BY
THE HY-DYNAMIC CO.
419 SKOKIE HIGHWAY, LAKE BLUFF, ILLINOIS
CEdar, 4-5400



Handle Your Fluids with FLOWAY PUMPS

The Detroit Edison Co. uses this space-saving, 2-stage FloWay vertical pump for sump pumping in a manhole shaft. Discharge, 150 gpm at 90' tdh with 5 hp, 3600 rpm motor.

as these leaders do...

U. S. Steel · Union Carbide · Detroit Edison · Chas. Pfizer
General Electric · Pan American · Premier Oil
Colorado Springs ... and many others

Job Tailored Pumps

FloWay vertical and submersible pumps today handle just about everything fluid, from water for cities and cooling towers, to highly corrosive and volatile chemicals. Wide selection of components – heads, column assemblies, packing boxes, suction cases, impellers – enables us to "custom make" pumps suited to your problem... at competitive prices. Cast iron, bronze, stainless steel, special alloys, etc. are used, as required.

Submersibles and Verticals

Submersibles from 100 to 4000 gpm, 0-1000 psi, 1750 and 3600 rpm, for wells 8" and larger. Verticals from 15 to 5000 gpm, 0-1000 psi, 800-3600 rpm. Both types comply with AWWA and Hydraulic Institute specifications and are approved by Corps of Engineers for aircraft fueling.

Bring Your Pump Problems to Us

In the field and in the factory your problems get personal attention from our closely-knit staff. Thirty years' designing and manufacturing experience – completely modern facilities. Literature and estimates without obligation. Wire or write us today for name of nearest representative. Fiese & Firstenberger Mfg., Inc., P.O. Box 164, 2494 Railroad Ave., Fresno, Calif.

1

FLOWAY Pumps

30 YEARS OF PUMP RESEARCH 30 QUALITY

Couple for Plain End Pipe

Heavy rubber sleeve gasket fits over plain pipe ends to be joined, cast iron collar locks it into place with two bolts. Steel teeth embedded into collar bite the pipe ends and holds them together. For 1 in. to 6 in. pipe. Victaulic Co. of America, 1100 Morris Ave., Union, N. J.

Plastic Pipe Cutter

Special cutting wheel for plastic pipe attaches to Ridgid No. 205 tubing cutter. Cuts pipe up to 2 in. dia with wall thickness up to ¼ in. Wheel stores in cutter's handle when not in use. Ridge Tool Co., Elyria, Ohio.

Power Trowel

Four-blade, 5.75-hp, Roto-Trowel for finishing concrete slab. Model G42, 34-in. size, has four float blades (10 x 14 in.) and four finish blades (6 x 14 in.); all blades are reversible. Adjustable rpm range is from 40 to 120. Stow Manufacturing Co., 19 Shear St., Binghamton, N. Y.

Space Heater

S80, portable, oil-fired space heater will produce a 25-ft jet stream of heated air that can be adjusted between 20,000 and 80,000 Btu. Weighs 46 lb, has 5-gal fuel tank. Operates for 30 hours on low flame and 8 hours on high. Stow Manufacturing Co., 19 Shear St., Binghamton, N. Y.

Lighting Fixtures

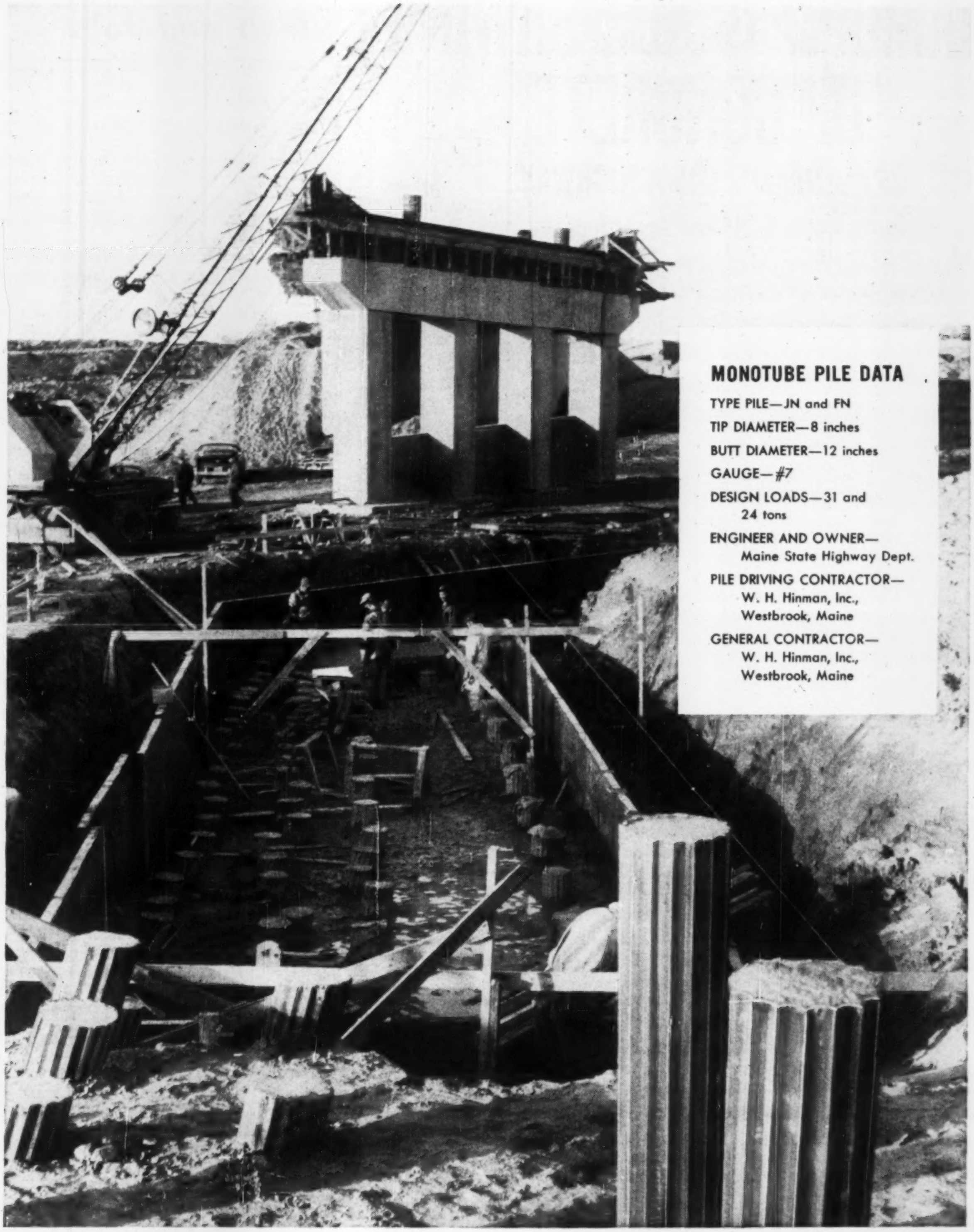
Series 82 and 84 for interior and exterior downlighting with medium base incandescent lamps. Series 4-200 and 4-300 post lights are for incandescent or mercury vapor lamps. Pole sizes to 12 ft. All four series have anodized aluminum finish and prismatic or moulded structural glass diffusers. McPhiben Lighting, 1329 Willoughby Ave., Brooklyn 37, N. Y.

Ceiling Panel

Fire Guard Nailing Panel protects steel joists from flame for over three hours. Completely dry installation with standard nailing channels and steel bridging clips at joints. Panels 2 x 5 ft. serve as finished industrial or commercial ceiling. Armstrong Cork Co., Lancaster, Pa.

Air Cooler

S & C washer-evaporator coolers (for cleaning, cooling and humidifying air) have all parts made of rigid polyvinyl chloride plastic, except for steel base and frame. Plastic piping, nozzles, nuts and bolts, etc., resist corrosion and combustion. S & C Manufacturing Co., 3533 Cardiff Ave., Cincinnati 9, Ohio.



MONOTUBE PILE DATA

TYPE PILE—JN and FN

TIP DIAMETER—8 inches

BUTT DIAMETER—12 inches

GAUGE—#7

DESIGN LOADS—31 and
24 tons

ENGINEER AND OWNER—
Maine State Highway Dept.

PILE DRIVING CONTRACTOR—
W. H. Hinman, Inc.,
Westbrook, Maine

GENERAL CONTRACTOR—
W. H. Hinman, Inc.,
Westbrook, Maine

STRENGTH AND STABILITY with cold-rolled Monotube steel piles for this skew bridge, Portland, Maine. High yield-strength Monotubes overcome severe driving conditions and resist horizontal forces inherent in skew bridge design.

Tapered, fluted Monotube piles are available in lengths, diameters and gauges to meet every requirement. The Union Metal Manufacturing Co., Canton 5, Ohio — Brampton, Ont., Canada.

UNION METAL

Monotube Foundation Piles

DIAMOND BLADE SAWING OF CONCRETE

Case Report: IOWA HIGHWAY

COST-$.055 per linear foot

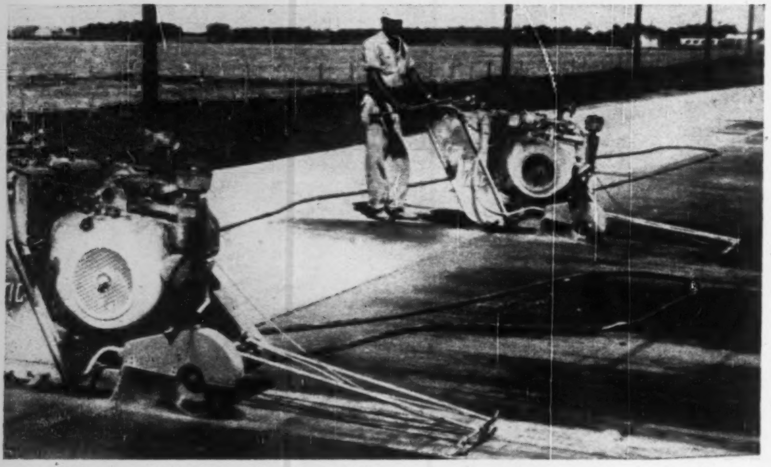
TYPE OF WORK – Concrete Highway

AGGREGATE – River Gravel

SAWING OPERATION – Diamond blades for all sawing.

TYPE OF DIAMOND – Engelhard Hanovia SND-MB diamond abrasive.

DIMENSIONS – Longitudinal joint 2″ x 3/16″.
Transverse joint 2″ x ¼″ on 60 ft. centers.



Diamond Blade Sawing is providing dual economies covering the cost of construction as well as the maintenance of concrete highways and runways. The paving procedure is a monolithic pour, which also assures optimum rideability and close adherence to surface tolerances.

In the construction phase, Diamond Blade Sawing reduces time and labor costs significantly—joints are cut to precise depths and widths by high speed semi-automatic equipment. The operation neither interferes with nor delays the paving procedure.

Maintenance engineers are reporting savings that run as high as 50%. Only the *sawed* joints can assure maximum uniformity of the concrete. Sawing does not displace the aggregate, it *removes* it—thus eliminating the basic cause of spalling, cracking and chipping.

For detailed information and field-use reports
from state highway officials and contractors, write to
Engelhard Hanovia, Inc., for Report #101.

SND-MB is a result of research that has greatly increased diamond cutting efficiency. Engelhard Hanovia, Inc. is the leading supplier of SND-MB to the manufacturers of diamond blades.

★ENGELHARD HANOVIA, INC.★
INDUSTRIAL DIAMOND DIVISION
113 ASTOR STREET • NEWARK 2, NEW JERSEY

Men and Jobs

Crawford H. Greenewalt Wins John Fritz Medal

Crawford H. Greenewalt, president of E. I. du Pont de Nemours & Co., is 1962 recipient of the John Fritz Medal, highest honor of the engineering profession.

He was cited for his contribution to translation of research achievements in the field of sound engineering into useful products. President and chairman of the executive committee of du Pont since 1948, Mr. Greenewalt joined the company in 1922 immediately upon graduating from MIT with a degree in chemical engineering.

The award is sponsored by several national engineering societies and is presented not more than once each year for scientific or industrial achievement in pure or applied science. It was established in 1902 as a memorial to John Fritz, a prominent engineer and steelmaker.

Some of the distinguished recipients of the medal include Westinghouse, Alexander Graham Bell, Edison, General Goethals, Orville Wright, Marconi, Sperry, Hoover, Michael I. Pupin, and Kettering.

Mr. Greenewalt is a trustee of the Carnegie Institution of Washington, a regent of the Smithsonian Institution, a director of the National Bureau of Economic Research, and a member of the MIT Corporation. In 1960 he was appointed a member of the long-term Commission on National Goals.

His previous honors include the Chemical Industry Award of the American Section, Society of the Chemical Industry; the William Proctor Prize for Scientific Achievement, presented by the American Association for the Advancement of Science; and the American Society of Metals' award for Advancement of Research.

Gilbert R. Pickett has been elected president of E. H. Lawhon Construction Co., of St. Joseph, Mo. He is succeeded as vice president by **Charles E. Parsons**.

John M. Schmidt has joined A. M. Kinney, Inc., Cincinnati consulting engineers, as project manager. He was formerly senior partner of Schmidt, Forrest & Associates, Saskatchewan consultants.

Robert J. Myers was named assistant to the president of the Indianapolis Water Co. and of the Philadelphia Suburban Water Co. He was vice president of Raffensperger, Hughes and Co.

Harold Marks has been named head

of the traffic and transportation division of Victor Gruen Associates, Beverly Hills architectural, planning and engineering firm. He is the former Los Angeles County Traffic planning engineer.

Charles D. Morrissey was made a partner in the New York City engineering and architectural firm of Praeger-Kavanagh-Waterbury. He has recently supervised defense projects for the company.

Walter C. Hopkins has been named vice president of Michael Baker Jr., Inc., Rochester, Pa., consulting engineers. He will take charge of the firm's operations in the Philippines including improvement of the Manila International Airport and a nationwide dredging program. Mr. Hopkins was deputy chief engineer of the Maryland State Roads Commission where he served for 41 years.

Leonard H. Hudson was elected executive vice president of Baltimore Contractors, Inc., of Baltimore, Md.

The Cleveland engineering and construction firm of H. K. Ferguson has named three new vice presidents, **James N. Barnes,** in charge of new business; **Gordon Wagner,** construction; and **Raymond B. Aufmuth,** engineering. Other appointments include **William G. Cronk** as eastern district manager; **Alfred G. Gerber,** manager of foreign operations; and **Stanley J. Jasbeck,** chief estimator.

Victor O. Gray and **Daniel J. Evans** have formed the engineering firm of Gray & Evans in Seattle, Wash. Both have been in private practice and Mr. Evans was most recently manager of the Mountain Pacific chapter, AGC.

David G. Liu was admitted to partnership in the Los Angeles firm of Dames & Moore, consultants in applied earth sciences. Mr. Liu has been in charge of the company's Honolulu office.

William H. Connolly was appointed director of the prestress design division of Cleverdon, Varney and Pike, Boston consultants. He was chief structural engineer for Goldberg, LeMessurier and Associates.

James P. Hawke has opened a consulting engineering office in San Francisco specializing in structural and hydroelectric design. In past work with Kaiser Engineers, J. H. Pomeroy & Co., Inc. and International Engineering Co., Inc., he directed engineering on Ghana's Volta River hydro project, the Lockheed Polaris Missile plant at Sunnyvale, Calif. and the Tri-Dam project of the Oakdale and South San Joaquin irrigation districts.

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Structural Design to Resist Nuclear Blast

Design of Structures to Resist Nuclear Weapons Effects—ASCE Manuals of Engineering Practice No. 42 — 150 pp. (paper covered). American Society of Civil Engineers, 345 E. 47th St., New York 17, N. Y. $4 ($2 to members).

The ASCE Committee has made a significant effort to apply known engineering principles to the little that is known about the effects of nuclear weapons to deduce recommendations for protection against these effects. A summary of the Committee's findings appear in this manual.

The Committee assumes weapons in the multimegaton range, design blast overpressures of 200 psi or less, and surface bursts. Procedures described are applicable to the design of shallow buried structures (within 100 ft of grade).

The recommendations are based to a considerable extent on the U. S. Department of Defense and Atomic Energy Commission manual, "The Effects of Nuclear Weapons," and some more recent data. However, a new edition of this manual may be published soon, possibly making necessary revision of some of the recommendations in the ASCE manual.

The Committee points out that unless there is reason to assume other blast pressures, shelters should be designed to resist at least the following peak overpressures:

• *Heart of population centers (over 200,000 persons)*	*100 psi*
• *Within 20 miles of such centers*	*30 psi*
• *Elsewhere*	*Fallout only*

The blast should be assumed to come from any direction. To determine the duration of the pressure a 20-megaton bomb may be assumed. (The duration may be obtained from an appropriate table or chart in "The Effects of Nuclear Weapons.")

Initial radiation resistance requirements should be related to the selected blast-resistance requirements. A table in the manual gives radiation effects data for a 20-megaton bomb.

In addition, a fallout (gamma) radiation level and effective radiation level must be assumed to arrive at the radiation-resistance requirements. In the absence of specific contrary information, a peak value of 3,000 roentgens per hour may be assumed. Effective arrival time may be taken as 30 minutes.

Minimums of 10 sq ft and 12.5 sq ft (65 cu ft and 80 cu ft) per person are recommended for net and gross values, respectively, for any shelter stay time beyond a few hours.

For shelter space that must be completely closed up, for example, during fallout arrival, fire or biological or chemical warfare attack—such factors as temperature, humidity, carbon-dioxide build up and oxygen depletion dictate a maximum closed period of about three hours. Otherwise, air circulation, cooling and revitalization are required.

Where building density is such that firestorms are a criterion, a longer closed-up time must be considered, and heavy thermal shielding, air recirculation, cooling and revitalization are necessary. The time period involved may be two or more times the duration of the firestorm itself (8 to 16 hours).

To exclude fallout contamination (or biological or chemical warfare agents) from the shelter interior, pressurization of 0.4 to 0.6 in. of water is necessary, as well as appropriate filtration of the incoming fresh-air supply. In general, the Committee believes, commercial air-conditioning filters are adequate for fallout contaminants, and special filters are available for biological and chemical warfare agents.

Pressurization can be maintained by controlling the flow of exhaust air through decontamination or other outer rooms, or both, functioning as airlocks, as well as by a sealed building. A pressure of 0.1 in. of water should be maintained between rooms to direct exhaust-air flow. Sealing requires special attention to such things as service trenches, drainage piping, electrical conduits and any other openings through which uncontrolled air leakage may occur.

A measure of protection against fallout is the amount by which shielding reduces radiation in the protected area compared with that in the surrounding exposed area. This ratio is called the protection factor. A protection factor of 100 generally is considered a minimum for a shelter.

Shielding may well control thicknesses of walls and roof, rather than blast considerations. When it does, lower-strength concrete may be more economical than high-strength concrete, since shielding is a function of density, not strength. In some cases, a heavy concrete, made with iron-ore aggregate, may be more economical than standard-density concrete. For shielding purposes, minimum concrete thickness may be taken as 12 in. and minimum earth cover as 3 ft.

Noted Architects and Their Works

Architecture Today and Tomorrow—By Cranston Jones. 248 pp. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N.Y. $17.50.

This is an extensively illustrated discussion of the works of 25 famous architects by a senior editor of Time, who has interviewed many of them. In addition to describing their outstanding building projects, he also gives a brief biography of each and delves into the reasons for their designs.

The book is divided into three parts. Part One, The Form Givers, deals first with the pioneering contributions of Louis Sullivan and Frank Lloyd Wright in the U.S. It then goes on to display the advances in architecture attributable to such foreign-born designers as Auguste Perret and Le Corbusier.

Part Two, Modern in Transition, covers the projects that have been undertaken by 13 contemporary architects and architectural firms.

Part Three is devoted to analyzing the works of five men noted for their designs of space structures.

Mr. Jones writes with enthusiasm, and plentiful quotes from the architects gives the book an air of authenticity.

Just Published . . .

The Consulting Engineer by C. Maxwell Stanley. 258 pages. John Wiley and Sons, 440 Park Ave. South, New York 16, N.Y. $5.95

Frame Analysis—by A. S. Hall and R. W. Woodhead. 247 pages. John Wiley and Sons, 440 Park Ave. South, New York 16, N.Y. $8.50

Dynamic Analysis of Machines—by Joseph Edward Shigley. 646 pages. McGraw-Hill Book Co. Inc., 330 West 42nd Street, New York 36, N.Y. $7.50

Industrial Building, Vol. I—Proceedings of the Industrial Building Congress. 232 pages. Clapp & Poliak Inc., 341 Madison Ave., New York 17, N.Y. $10.00

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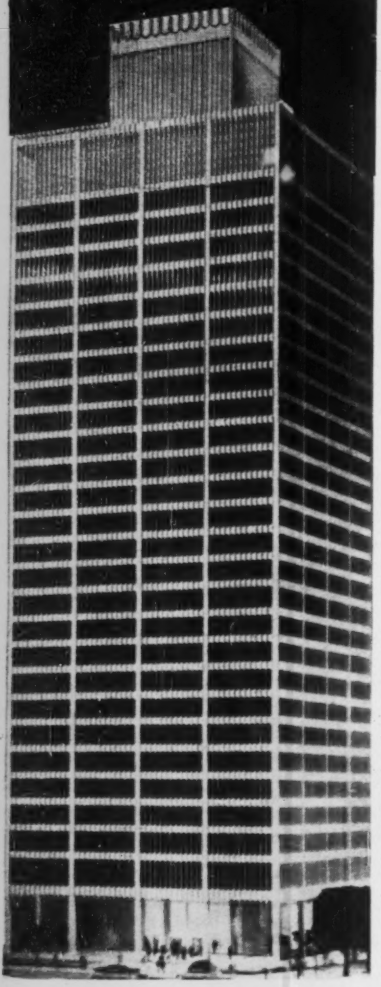

Seminar Papers on Waste Water Disposal. George M. Reece, Editor. 280 pages. Boston Society of Civil Engineers, 20 Pemberton Square, Boston 8, Mass. $3.50

Fly Ash in Concrete. An evaluation by Edward A. Abdun-Nur. 138 pages. Highway Research Board Bulletin 284. 2101 Constitution Ave., N.W., Washington 25, D.C. $3.00

Drainage Structures. 31 pages. Highway Research Board Bulletin 286. 2101 Constitution Ave., N.W., Washington 25, D. C.

Land Use and Development at Highway Interchanges. 82 pages. Highway Research Board Bulletin 288. 2101 Constitution Ave., N.W., Washington 25, D. C. $1.80

Varved Clays—A Selective Bibliography to 1960—by Dr. J. B. Metcalf and D. L. Townsend. 44 pages. Civil Engineering Report #18. Queens University, Kingston, Ontario, Canada.

Bituminous Mixes Prepared with Ungraded Local Aggregates—by L. H. Csanyi. 65 pages. Iowa Engineering Experiment Station, State University, Ames, Iowa. $1.50

Building Research 1960. National Research Council of Canada. 90 pages. Division of Building Research, Ottawa, Canada. $1.00

Proceedings of Symposium No. 1. Spillway Design Floods. Canada Department of Northern Affairs and National Resources. 304 pages. National Research Council, Ottawa 2, Canada. $2.00

Rainfall Frequency Atlas of the United States. Weather Bureau Technical Paper No. 40. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. $1.75

Sewage and Water Works Construction 1960. Public Health Service Publication No. 758. 14 pages. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 15¢

Refuse Collection and Disposal. An annotated bibliography 1958-1959. By E. R. Williams and R. J. Black. 73 pages. Public Health Service Publication No. 91, Supplement D. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 45¢

The AASHO Road Test—History and Description of Project. 56 pages. Highway Research Board Report #61A. 2101 Constitution Ave., N.W., Washington 25, D. C.

Roof Drainage Products. Commodity Standards Division, OTS, U. S. Department of Commerce, Washington 25, D. C.

Past Examinations for Professional Engineer. 1961 edition. Compiled and published by J. D. Constance, 625 Hudson Terrace, Cliffside Park, N. J. $1.50

The Death and Life of Great American Cities—by Jane Jacobs. 459 pages. Random House, 457 Madison Ave., New York 22, N.Y. $5.95

A Treatise on Hydrodynamics—by A. B. Basset, 2 volumes. 264 + 328 pages. Dover Publications, 180 Varick St., New York 14, N.Y. Paperback republication. $1.75 each vol.

Mechanics—by J. P. Den Hartog. 462 pages. Dover Publications, 180 Varick St., New York 14, N.Y. Paperback republication. $2.00

Mathematics of Modern Engineering—by Ernest G. Keller and Robert E. Doherty. 2 volumes. 310 + 309 pages. Dover Publications, 180 Varick St., New York 14, N.Y. Paperback republication. $1.65 each vol.

Supersonic Aerodynamics. A Theoretical Introduction—by E. R. C. Miles. 255 pages. Dover Publications, 180 Varick St., New York 14, N.Y. Paperback republication. $1.45

Mathematical Methods for Scientists and Engineers—by Lloyd P. Smith. 453 pages. Dover Publications, 180 Varick St., New York 14, N.Y. Paperback republication. $2.00

Fluid Mechanics for Hydraulic Engineers—by Hunter Rouse. 422 pages. Dover Publications, 180 Varick St., New York 14, N.Y. Paperback republication. $2.25

Applied Elasticity—by John Prescott. 666 pages. Dover Publications, 180 Varick St., New York 14, N.Y. Paperback republication. $2.95

Strength of Materials—by J. P. Den Hartog. 323 pages. Dover Publications, 180 Varick St., New York 14, N.Y. Paperback republication. $1.95

Causes and Measurements of Walkway Slipperiness. Federal Construction Council Technical Report No. 43. National Research Council, 2101 Constitution Ave., Washington 25, D. C. $2.00

Symposium on Acoustical Fatigue. STP 284, 66 pages. American Society for Testing and Materials, 1916 Race St., Philadelphia 3, Pa. $2.50, to ASTM members $2.00.

Papers on Road and Paving Materials. STP 294. 92 pages. American Society for Testing and Materials, 1916 Race St., Philadelphia 3, Pa. $3.50, to ASTM members $2.80

Proceedings of the Highway Geology Symposium—by W. T. Parrott, Virginia Department of Highways, Richmond, Va. Three volumes. $15.00 for the public and $12.50 for educational institutions.

Street Lighting and Accidents—publication No. 8, 28 pages. International Commission on Illumination, 57 rue Cuvier, Paris V, France. $2.00.

Water-Surface Profiles and Velocity Distribution for Flow in a Long Uniform Channel—by C. J. Posey and R. W. Powell. 49 pages. Report No. 26, Rocky Mountain Hydraulic Laboratory, Allenspark, Calif. $2.00

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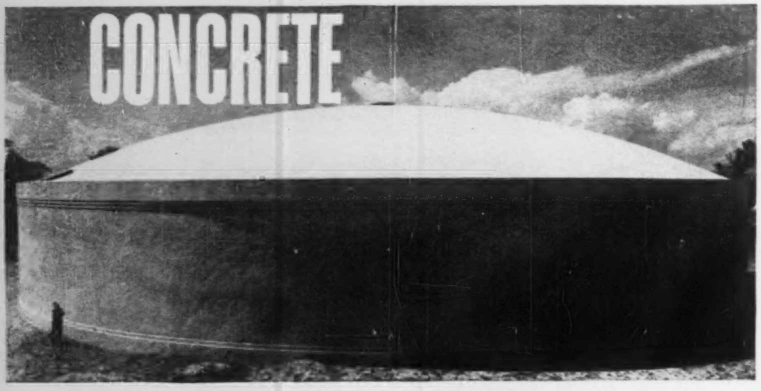

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WASTE WATER TREATMENT AND DISPOSAL —14 lectures publ. by Boston Society of Civil Engineers, 20 Pemberton Square, Room 601, Boston 8, Mass. $3.50.

FILLING AND EMPTYING SYSTEM, NEW POE LOCK, SAULT STE. MARIE, MICH. Technical Report No. 2-561. U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss. $1.00.

SPILLWAY FOR MARKLAND LOCKS AND DAM, OHIO RIVER, KENTUCKY AND INDIANA. Technical Report No. 2-566. U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss. 75 cents.

STYRENE-RUBBER PLASTIC DRAIN AND SEWER PIPE AND FITTINGS. Commercial Standard CS228-61. Office of Technical Services of the Business and Defense Services Administration. U.S. Government Printing Office, Washington 25, D. C. 10 cents.

DEVELOPMENT PROBLEMS WITH COMPONENT CONSTRUCTION. 22 pages. Building Research Institute, 2101 Constitution Ave., Washington 25, D. C. $2.00.

PERFORMANCE OF BUILDINGS. 90 pages. Publication #879. Building Research Institute, 2101 Constitution Ave., Washington 25, D. C. $5.00.

STRUCTURAL FOAMS. 83 pages. Publication #892. Building Research Institute, 2101 Constitution Ave., Washington 25, D. C. $5.00.

COLLEGE AND UNIVERSITY RESEARCH REPORTS. Report on program conducted by the Education Liaison Committee, 1960 Spring Conferences of the Building Research Institute, 2101 Constitution Ave., Washington 25, D. C. $1.50.

THE ENGINEER IN STATE GOVERNMENT—19 pages. National Society of Professional Engineers, 2029 K St., N.W., Washington 6, D.C. $.50 for members; $1.00 for non-members.

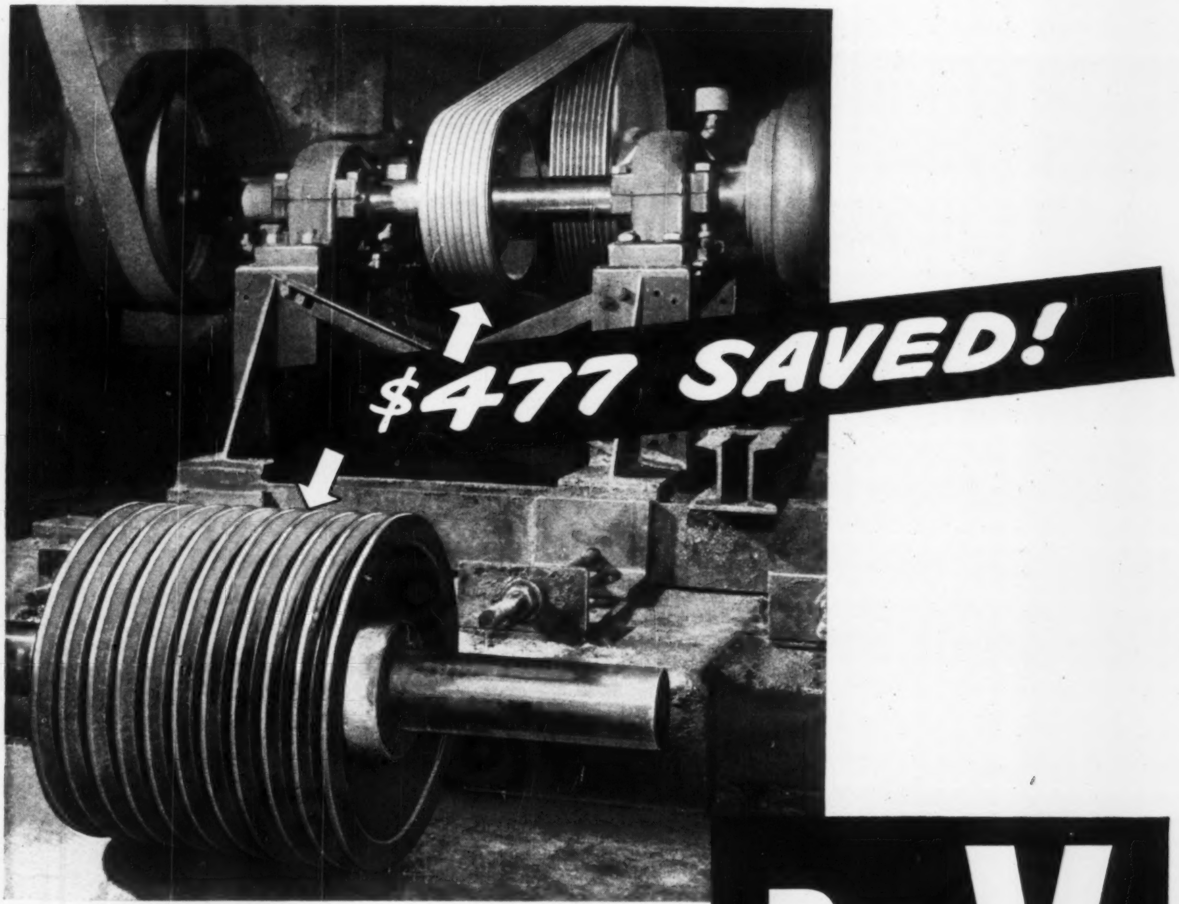
PAPERS ON FLOOD PROBLEMS—edited by Gilbert F. White. Department of Geography Research Paper No. 70. 228 pages. University of Chicago, Department of Geography, Rosenwald Hall, Chicago 37, Ill. $4.00

PEAK RATES OF RUNOFF FROM SMALL WATERSHEDS—Hydraulic Design Series No. 2 by the Division of Hydraulic Research, Bureau of Public Roads. 35 pages. Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. $.30

PLANNING, POLICY MAKING, AND RESEARCH ACTIVITIES—U. S. DEPARTMENT OF THE INTERIOR—44 pages. Resources For the Future, Inc., 1775 Massachusetts Ave., N.W., Washington 6, D.C. $.50

INTAKE STUDIES, DARDANELLE LOCK, ARKANSAS RIVER; HYDRAULIC MODEL INVESTIGATION. Technical Report 2-573. U. S. Army Engineer Waterways Experiment Station, Vicksburg, Miss. 75¢

LANDSLIDES INVESTIGATIONS—by Arthur B. Cleaves. 67 pages. Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. 30¢



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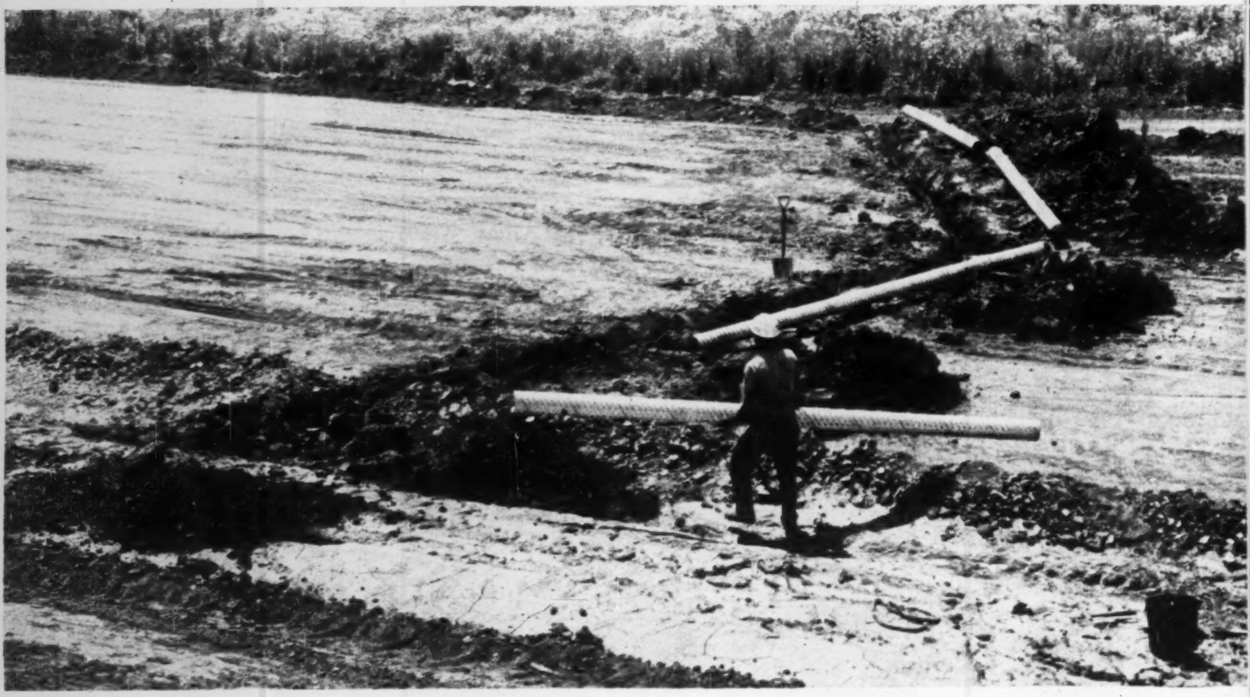

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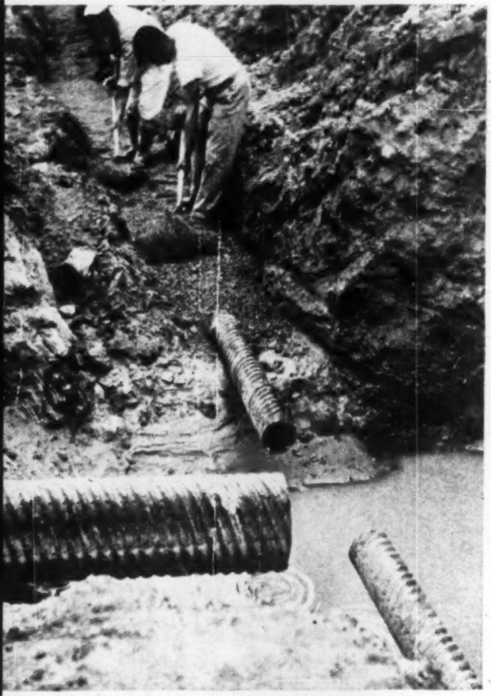

◀ INTERSTATE 84—Catchbasin will be constructed where three lines of Armco Perforated Pipe meet on Interstate 84 subdrainage project near Danbury, Connecticut.

INTERSTATE 15—Trench is advanced for next section of Armco Perforated Pipe along Interstate 15 in Utah. Note ground water in the trench. ▶

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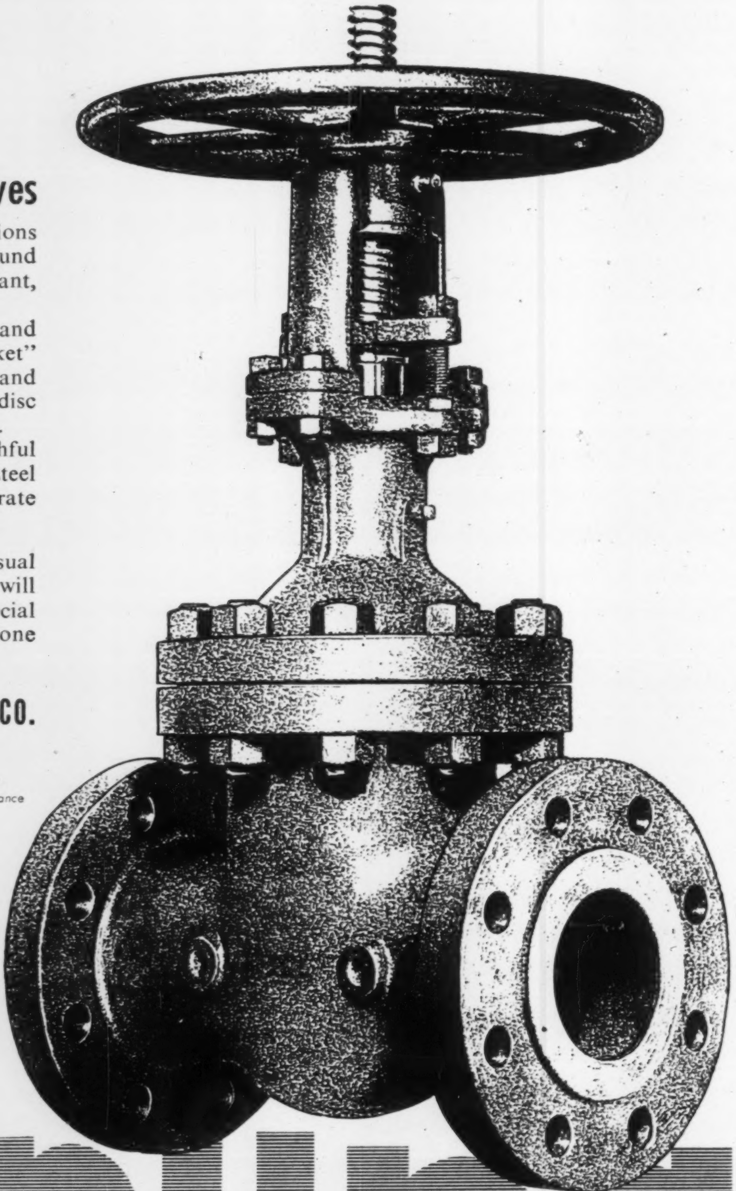

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Publications

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USE ENR's inquiry card to order the publications you want all at once. The card is on page 159.

Construction Equipment

Helicopter information

Facts about helicopters of interest to contractors. Speed, range, lifting capacities, possible uses. Mercury. **301**

Tower cranes

Specifications, capacities, construction details and working ranges for the full line of Record tower cranes of free traveling, climbing and static types. 64 pages. Two color. Briere Corp. **302**

Overhead crane

Bridge, trolley and hoist specs of Novo 300 series cranes. Five to 20-ton capacities, ac or dc powered. Milwaukee Crane Division, Novo Industrial Corp. **303**

Wagon crane excavator

Dimensions, weights, lifting capacities and accessories for H-5 Hydrocrane crane excavator mounted on a self-propelled wagon. 4 pages. Bucyrus-Erie. **304**

Crane excavator

Mounting details, components and attachments for the H-3 Series Two Hydrocrane. 12 pages. Bucyrus-Erie. **305**

Crane excavators

Fifteen data sheets on the P & H models 525, 535 and 550 crane excavators when used as clamshells, cranes, draglines, hoes and shovels. Each sheet contains tables of working ranges, cable and appurtenance speeds, ground pressures, working range diagrams and formulae for determining bucket sizes. Harnischfeger. **306**

Crane excavator

Working ranges, unit dimensions and pictures of components of the Insley ¾ cu yd Type L crawler. 12 pages. Insley. **307**

Wheel excavator

Operating details, specifications and engineering data for Model 2000 wheel excavator with a maximum theoretical capacity of 3,600 cu yd per hr. Bulletin WE-1. Baldwin-Lima-Hamilton Corp. **308**

Earthmovers

Pictures of and specifications for the Euclid line of earthmovers including two crawler tractors with 211 and 425 hp engines, eight scrapers with 7 to 40 cu yd capacities, nine rear dumps with 10 to 62 ton capacities, a bottom dump with a 40 cu yd capacity and two coal haulers with 51 ton capacities. 20 pages. Euclid. **309**

Earthmovers

Greater profits through the use of LeTourneau-Westinghouse earthmovers and attachments. Includes table showing dollar value of conservation work by regions. Le Tourneau-Westinghouse Co. **310**

Front end loader

Action photos and condensed specifications for Eimco 123 and 126 front end loaders have a capacity at full lift of 5 tons and 9 tons respectively. Eimco **311**

Front end loader

Lorain ML-309 Moto-Loader with 9,000 lb operating capacity. Important features, control system, frame construction and on-the-job pictures. 8 pages. The Thew Shovel Co. **312**

Front end loader

General specifications, component details and job studies for Traxcavators of various sizes and of both wheel and track type. Caterpillar. **313**

Wheel loader

Nineteen advantages of the Fordson Super Major with loader and backhoe attachments. Construction details, job applications. Ford Motor Co. **314**

Tractor shovel

Specification bulletin for Trojan 404 rubber tired tractor shovel which weighs 44,500 lb and can handle up to a 6 cu yd bucket. Yale & Towne. **315**

Skid shovels

Drawings and action pictures of the Drott 4-in-one skid shovel in use as skid shovel, bulldozer, scraper and clamshell. Construction and performance data on TD-6, TD-9, TD-15 and TD-20. 24 pages, four color. International Harvester. **316**

Elevating grader

Specification sheet for the "Plainsman" a trailer type elevating grader attachment for Austin-Western machines. Baldwin-Lima-Hamilton. **317**

Asphalt finisher

Mark IV asphalt finisher with a swept back screed. Handles 6 to 13 ft. wide paving jobs. 4 pages. T. L. Smith. **318**

For More Information . . .

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Wheel roller

Six models of self-propelled wheel rollers of up to 30,426 lb gross weight. Includes table of weights and compaction pressures for various size tires. Browning Mfg. Co. **319**

Pneumatic roller

Description, specifications weight and compaction table for Model 9S-14 9 wheel pneumatic tire roller. 4 pages, 3 color. Littleford. **320**

Pneumatic roller

Specification sheets for Ingram pneumatic-tired rollers in the 10, 12 and 18 ton classes. Acme Iron Works. **321**

Truck body

General service truck bodies with side boxes and compartments of different sizes and shapes for a variety of purposes. Highway. **322**

Tilt trailer

Ten Tilt-Top trailers with single and tandem axles and capacities of from 8,000 to 44,000 lb. Pictures and specifications. 12 pages. Miller. **323**

Dump trailers

Four basic types of dump trailers to meet construction requirements. 8 pages. Trailmobile. **324**

End-dump trailers

General specifications, body specifications, body options and trailer requirements for 3 Star End Dumps in models from 16 to 26 ft lengths and capacities of from 10 to 15 cu yd. Gar Wood Industries, Inc. **325**

Tractor dozer

On-the-job photographs of the Michigan Model 480 tractor dozer powered by a 600 hp Cummins Diesel. Includes power train diagram and list of main features. 16 pages. Clark Equipment Co. **326**

Tractor scrapers

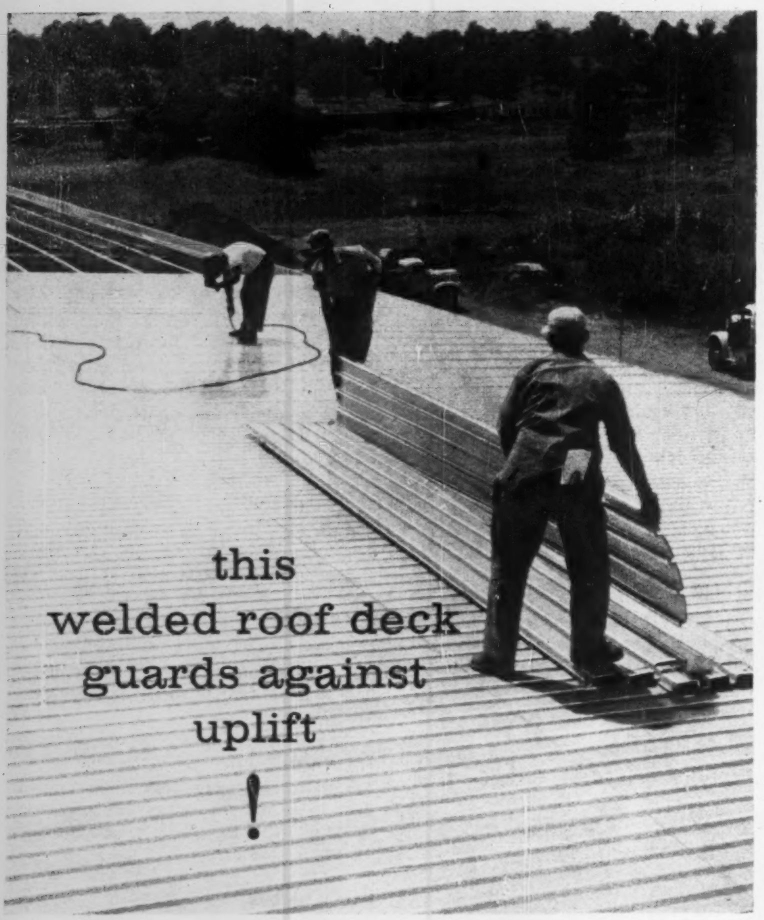
Power train details, construction and operating details for the Models 110, 210 and 310 Michigan tractor scrapers. Clark Equipment Co. **327**

Truck mixers

Transcrete inclined drum truck mixers in 5½, 6 and 7 cu yd models. Mixing drum capacities and volumes, drive specifications and general specifications. 6 page folder. Construction Machinery Co. **328**

Cement trailer

Photographs, drawings and specifications for an 800 cu ft capacity pneumatic cement trailer. 8 pages. Trailmobile. **329**



STEEL makes the difference

Steel roof deck has the inherent strength of steel. And it is also anchored by welding to the supporting framework.

Welding patterns provide a gross wind uplift resistance of 45 pounds per square foot for eave overhang; 30 pounds per square foot for all other roof areas.

The uplift resistance is sufficient to withstand hurricane forces. This has been proven on actual jobs in coastal regions.

Steel deck provides a lateral diaphragm that distributes the horizontal forces of wind and seismic thrust. It also provides lateral restraint to top chords of supporting steel structural members.

Resisting uplift and lateral loads is just one advantage of steel roof deck. Others are detailed in specific product catalogs available upon request to any member company of the Metal Roof Deck Technical Institute.

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Rotary trencher

Pipeline trencher that digs to 7 ft deep and up to 44 in. wide. Torque converter and tail-shaft governor described. 12 pages. Gar Wood Industries, Inc. **330**

Trencher and loader

Backhoe trencher and industrial loader, both designed to attach to the Oliver 550 tractor. Diagrams and specs given. 6 pages. Ware Machine Works, Inc. **331**

Trench backfill conveyor

Conveyor for casting spoil from trencher or dragline directly back into the trench over newly laid pipe. Specs and description of screen and scalping-bar attachments. 4 pages. Kolman Mfg. Co. **332**

Batchers

Complete line of cement and aggregate batchers ranging in size from 14 to 70 cu ft for cement, 1 to 10 cu yd for aggregate. 24 pages; includes state and federal specifications and information on converting existing equipment to automated specifications. Erie Strayer Co. **333**

Off-the-road scooter

The Haulster, a three-wheel off-the-road scooter. Flat bed, stake, dump and personnel carrier bodies. Cushman. **334**

Paving breakers

Paving breakers of from 38 to 86 lb models. Tools and accessories. 8 pages. Gardner-Denver. **335**

Aggregate crushing plants

Four mobile crushing and screening plants. All-electric or semi-electric drives. Capacities to about 200 cu yd per hr. Plant layouts. Specs. 8 pages. Smith Engineering Works. **336**

Gravity conveyor handbook

ABC's of materials handling with gravity conveyors. Roller assemblies with capacities up to 8,000 lb per roller. 28 pages. Standard Conveyor Co. **337**

Lift truck

Engineering, construction and operating features of seven F Series lift trucks. On-the-job photos, cutaway drawings, power curves. 24 pages. Allis-Chalmers. **338**

Lift trucks

Gas, LP or diesel powered. Exploded views and descriptions of major operating parts, including power train and hydraulic system. Ten front end attachments. Specs for 14 Series F models, to 10,000-lb capacity. 22 pages. Allis-Chalmers. **339**

For More Information . . .

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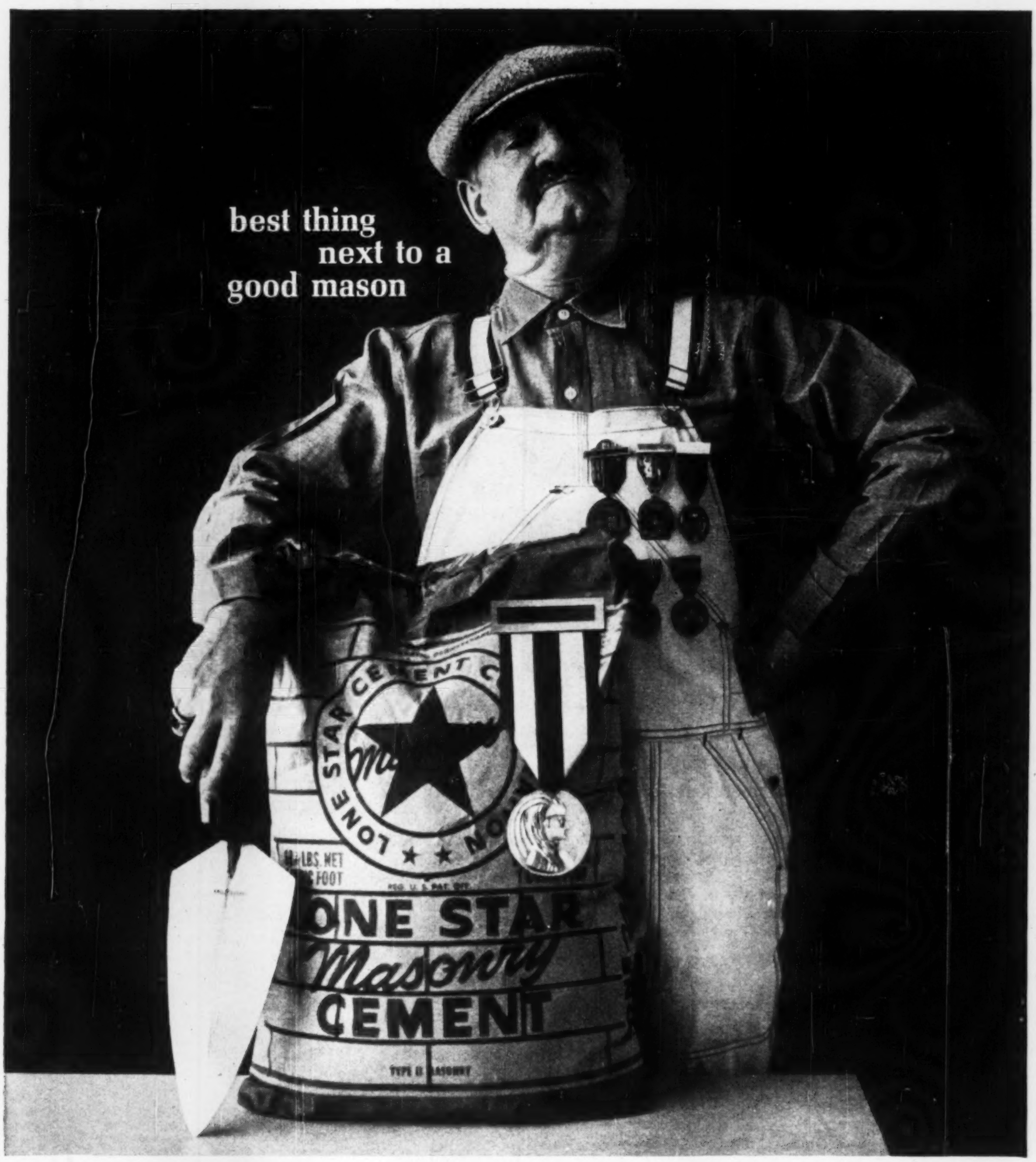

As any good mason knows, first-class masonry performance demands the finest possible combination of workmanship and materials. That's why more masons are choosing Lone Star Masonry Cement. It combines all the necessary ingredients, except sand and water, in exactly the right proportions. You get all the properties of top-quality mortar plus complete uniformity from sack to sack. That's not all! Lone Star Masonry Cement saves time, trouble and money . . . cuts your mixing time, makes clean-up easier, lets you get more production without unnecessary hustle. For the finest quality mortar at the lowest possible cost, specify Lone Star Masonry Cement. Try it on your next job. Lone Star Cement Corporation, 100 Park Avenue, New York 17, N.Y.

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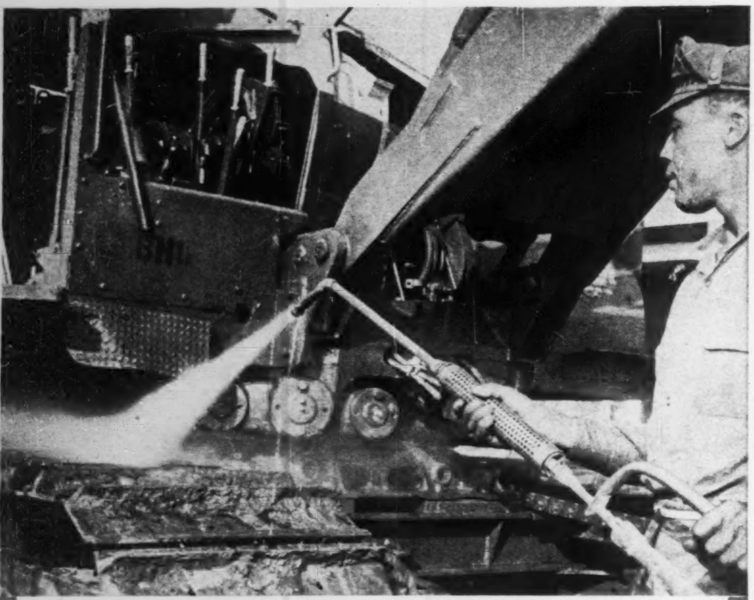

10 years old and still blasting grime 40 hours a week! Dalworth Machinery Co., Dallas, uses its Malsbary 500 HPC to clean about 50 big rigs monthly, plus hundreds of parts.

How to Boost Your Gross Profit

Steam clean with Malsbary HPC to cut costs 3 ways:

1. **By increasing mechanics' output,**
2. **By reducing cleaning costs, and**
3. **By getting equipment back on the job faster.**

Good mechanics are hard to come by. They work better and faster on equipment that is clean. And every minute a piece of equipment is tied up for cleaning and/or repairs is money down the drain. Chart here shows how you save by using HPC cleaning instead of steam vapor—savings can be over $20.00 per rig in cleaning costs alone, plus 2½ to 9½ hours downtime. (Figures based on average cleaning times for D9-size rigs covered with muck and grease):

	Steam Vapor Cleaner	HPC
Time	5 - 12 hours	2½ - 4 hours
Cost	$18.84 - $29.42	$7.37 - $13.40

Now add to the savings in cleaning costs, the potential gross income ($50 to $75 hourly for each big rig) on the 2½ to 9½ hours' time you save with HPC cleaning—and you're talking real money!

Model 250 HPC

SECRET OF HPC* EFFECTIVENESS is the Malsbary thermal-hydraulic pressure system *(Hydraulic Pressure Combination—an exclusive, patented device). With it you get an enormously more effective blast of atomized cleaning droplets (up to 400 psi) to cut grease, road oils, caked mud, old paint, etc. Three sizes: From 240 gph at 300 psi to 2100 gph at 400 psi. Stationary, tricycle or trailer mount. Thousands of satisfied owners, many using 2 or more HPC units. Try HPC yourself. Write or wire about our buy-and-try plan.

MALSBARY

Malsbary Manufacturing Company • 845 92nd Ave. • Oakland 3, Calif.

157

CLEANING TIP

Rebuilding rollers, idlers and tracks? You'll get a cleaner surface for hard-facing buildup, and without degreasing, by cleaning with hot solution at 300-400 psi from a Malsbary HPC cleaner.

. . . Publications

Fork lift

Load limitation charts, dimensional specifications, attachments available for Ford 4000 fork lift. 8 pages. Ford Motor Co. **340**

Cable layer

Explanation of how the Kelley Cable Layer when attached to a Caterpillar track type tractor rips through almost any material to depths of 7 ft and automatically lays cable, plastic pipe, flexible tubing or any other material that can be coiled. Kelley Products. **341**

Mobile towers

Strato-Towers, mobile basket lifts for repair, maintenance and rescue work, can be mounted on trucks, tractors or trailers. Dimensions, specifications and photos of units with reaches of from 30 to 110 ft. Young Spring & Wire. **342**

Steel forms

Custom designed steel forms from the drafting board to the job. Underwater, prestress, column, tunnel and bridge forms. 12 pages. Dixie Form & Steel Co. **343**

Waffle slab forms

Removable grid domes, of 16 ga steel, 4 to 12 in deep, for waffle slab concrete decks. Rib lay-outs, load calculations and tables. Cost estimating tables. Specs. 8 pages. Grid Flat Slab Corporation. **344**

Roof and floor forms

Complete load charts and deflection tables for Tensilform, permanent steel forms for concrete roof and floor slabs. Plus physical properties, and clipped or welded erection patterns. Specs. 8 pages. Wheeling Corrugating Co. **345**

Inflatable forms

Voidcrete, inflatable concrete forms, made of rubber. For long-span pretensioned slabs, cored slabs and piles, bridge decks, vertical drains and service ducts. Applications, specs. 16 pages. Elgood Concrete Services. **346**

Hydraulic clutch

Specifications, applications, efficiency curves and dimensions for Vari-Draulic, a slippable fluid clutch for fixed and mobile units with .17 to 51.42 hp. 18 pages, three color. Hydraulics, Inc. **347**

Bucket teeth

Reference guide for Wearpact dipper teeth, ripper teeth, adapters and bases, and routing bits. American Steel Foundries. **348**

For More Information . . .

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Grade meter

How to read and use the Fredon Grade-Meter on bulldozers, graders and scrapers. 4 pages. Fredon Co. **349**

Floatation tires

How, why and where to use flotation tires on trucks and construction equipment. 16 pages. Harmo Tire and Rubber Co. **350**

Concrete handling

Selection data for concrete handling equipment. Buckets, hoppers, power hooks, carts and chutes. And batch plants, vibrators and accessories. Gate powering methods for buckets, hoppers and bin gates. Specs. 32 pages. Gar-Bro Manufacturing Co. **351**

Bump cutting

Description and applications of the Bump Cutter with diamond blades. Advantages and economies of bump cutting. Bulletin No. 2. Englehard-Hanovia, Inc. **352**

Mortar mixers

Four plaster and mortar mixers, with 4, 6, and 8 and 10-cu ft capacities. Gas or electric powered. Operating features and complete specs. 5 pages. Construction Machinery Co. **353**

Rotary snow plow

Detailed specifications and applications of Sicard rotary snow plow attachment for Austin-Western torque converter power graders of the "300" series or larger. Austin-Western. **354**

Earth drill

For horizontal drilling under lawns, streets, etc. Diameters up to 12 in., depths to 200 ft. Gas-powered water-pressure pump and drill engine. Description, operational features. 4 pages. Construction Machinery Co. **355**

Large auger

Truck-mounted auger that digs holes up to 4 ft dia as much as 35 ft deep described in a six-page folder. Specs on swing-base and spotter-base models. Highway Trailer Industries, Inc. **356**

Rotary percussion drill

Principal of the rotary percussion rock drill explained in two folders totaling 12 pages. On-the-job photographs show the drill at work on hard-rock tunnelling projects. Joy Mfg. Co. **357**

For More Information . . .

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Rotary percussion drill

Application, operation of the Joy rotary percussion rock drill for rock too hard for rotary drilling and too soft for percussion drilling. 4 pages. Also technical bulletin 8090, a field report on RPD work at Smith Tunnel. 8 pages. Joy Mfg. Co. **358**

Concrete boring

"How to Use the Roto-Imp", a 20 page manual, explains methods of drilling holes up to 6 in. in diameter in reinforced concrete. Roto-Imp. **359**

Masonry drill

Heavy-duty, diamond masonry drill. With vacuum hold-down and Black & Decker electric motor. Instant shift to 250 or 900 rpm. For holes from 1 to 6½-in. dia. 4 pages. Sprague and Henwood, Inc. **360**

Masonry drills

Diamond bits, ¼ to 16 in. dia. Air or electric-drive drills. For vertical, horizontal or angular drilling into concrete and masonry. Vacuum hold down, plus accessories. Specs. 8 pages. E. J. Longyear Co. **361**

Arc welding

Recommended applications for such welding accessories as electrode holders, ground clamps, cable connectors, lugs and splices. 14 pages. Tweco Products, Inc. **362**

MEZURALL
8 FT
CHROME CLAD

Concrete mix would grind the markings off most tapes!

This is Lufkin's Mezurall® tape . . . with unmatched Chrome Clad® blade that fights concrete, sand, mud and other abrasives.

Lufkin starts with a special tempered steel . . . bonds the markings to it. Then layer after layer of electroplating is applied, topped by a final layer of tough chrome. There's no other blade like it. Comes in 6′, 8′, 10′ and 12′ lengths . . . either ½″ or ¾″ widths. The Lufkin Rule Company, Saginaw, Mich.

Measure for measure, the finest made...

LUFKIN

SAGINAW, MICHIGAN

52 ft. by 14 ft. opening
(Other openings up to 65 ft. wide!)

For that BIG or extra RUGGED Door, Kinnear's "Goliath" slat is *unbeatable*

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(Actual Size)

KINNEAR
ROLLING DOORS
Saving Ways in Doorways

Roll-formed of steel or aluminum* this giant slat forms a curtain of unmatched strength — an almost impenetrable barrier! Ideal for extra large and special openings such as in prisons, piers, gantry cranes — wherever ruggedness and durability count more than the extra cost.

All Kinnear Rolling Door advantages are retained in the "Goliath" slat . . . space-saving, coiling-upward action . . . jamb-to-jamb doorway clearance . . . fast-action push-button control by means of the all-new Kinnear Motor Operator (optional) . . . protection against wind, weather, vandals, intruders . . . valuable resistance to fire . . . an unmatched record for long, low-maintenance service at low cost. Write today for free information.

**14 or 16 U.S. gauge steel; 10 or 12 B and S gauge aluminum. Other Kinnear curtain slats range down to 1¼ width, in various gauges of aluminum, steel or other metals.*

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Power tools

Catalog of ac-dc, pistol grip drills, nut runners and impact tools. Single and quantity purchase prices. Fabricated Products Co. **363**

Drill bits

Guide to proper selection of diamond bits and reaming shells. Data on classification of bits and shells, specifications, pictures. 8 pages. E. J. Longyear Co. **364**

Service tools

Service tools for major components of most lines of construction equipment and trucks. Includes tools for engines, hydraulic systems, transmissions, steering, brakes and axles. 122 pages. Price list, 30 pages. Kent-Moore. **365**

Building Materials

Structural steel

New steels, new shapes. Properties, applications and cost computations for carbon steels A7, A373, A36; for low-alloy steels A242, A440, A441; and heat-treated alloy steels USS T-1 and USS T-1 type A. 28 pages. United States Steel Corp. **366**

Steel beams

Open-web, welded, Span-R steel beams. Complete specs, properties and dimensions. Spans to 80 ft. Safe load tables for A7 and A36 steel. 6 pages. Elizabeth Iron Works, Inc. **367**

Precast concrete

Spancrete, prestressed, precast concrete roof, floor and wall slabs. In 4, 6 and 8-in. thicknesses. Safe load and insulation tables. Detail drawings of typical applications with masonry, steel and concrete members. Specs. 8 pages. Spancrete Machinery Corp. **368**

Curtain wall panels

Porcelpanels, steel or aluminum-backed panels laminated or assembled with porcelain-enameled facings. Texture, color and design patterns. Detailed cross sections. Specs. 8 pages. Ingram-Richardson Mfg. Co. **369**

Enameled panel wall

Sixteen panels faced with porcelain enamel steel, for low and high-rise curtain walls. Dimensioned cross sections, *U* factors and sq-ft weight. Examples of colorful applications. 8 pages. Caloric Corporation. **370**

Panel walls, windows

Sanpan, all-welded construction, translucent wall panels and window walls. Cross section details, colors. Specs. 6 pages. Panel Structures, Inc. **371**

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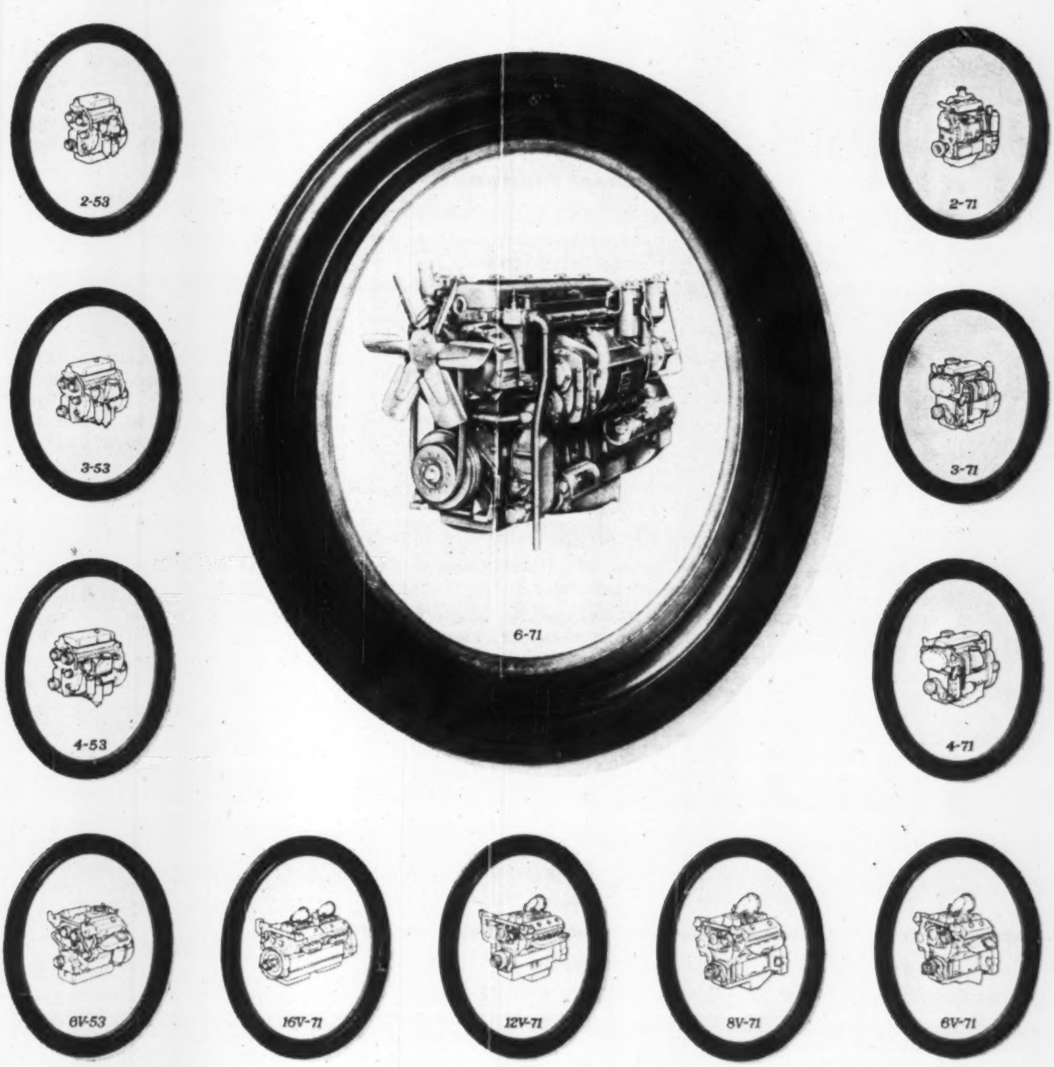

All in the family

A full power Diesel line—20 to 1008 h.p.—built to just *one basic design.*

That's the unique GM Diesel *family of engines concept* —the big difference in Diesel-powered equipment today.

Here's how it can make a big difference in your power and profit picture.

One design gives you lowest-cost parts and service, with *unmatched interchangeability of identical parts.*

One design (job-proven by over 90 million horsepower) lets the latest power advances be added without sacrificing reliability and long life—gives you greater value in *every* engine.

One design lets you meet growing horsepower needs merely by moving to the next engine in the series.

Result: The *more* GM Diesels you use, the *more* you profit *per engine.*

That's why, whether you buy new equipment from a manufacturer or repower the equipment you now have, it will pay you to *specify* GM Diesel. Detroit Diesel Engine Division, General Motors, Detroit 28, Michigan. (In Canada: General Motors Diesel Limited, London, Ontario.)

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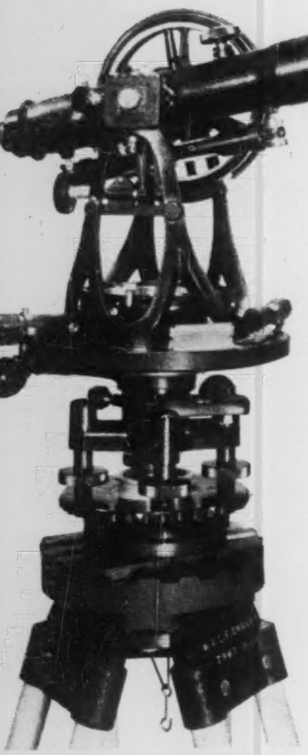
SERIES 53 & 71 ENGINES

One proven design throughout the line builds greater value into every engine



A Guide to OP and VP

Gurley Optical Plummet

The Optical Plummet Transit opens new avenues in accuracy, speed and convenience…eliminates inconvenience and lost time involved in centering a plummet over a point.

The Optical Plummet is a telescope through the vertical center (spindle) of a transit. It will point vertically when the transit plate is level. The telescope is turned at right angles by a prism, so that vision is actually horizontal. Setting and adjustment may be checked very simply and precisely by rotating the instrument 180 degrees.

The Gurley Shifting Head Tripod permits 1¾" movement of the transit in two directions 90° separated, without material disturbance to the level of the plate (the Optical Plummet thus remains operative through the entire centering procedure).

Advantages of the Gurley Optical Plummet Transit

- Saving in set-up time, as much as 33%—a factor when a crew is waiting.
- Eliminates swaying plumb bob.
- More accurate centering over point.
- On construction work—sights on points some distance below, such as encountered in bridge work and building construction.
- Made in U.S.A.—Little servicing, but easily repaired when necessary.

Gurley Optical Plummet Transits Available in 21 Combinations

With Circular Compass	With Trough Compass	Without Compass
OP-52	—	OP-57
OP-62	—	OP-67
OP-132	OP TC 137	OP-137

And with limb reading to 1 min.; or 30 sec., or 20 sec. . . . Stiff-leg or Extension-leg Tripods with Constant-Level Shifting Head and wide frame European-type construction.

Variable Power is standard on Gurley Transits and Levels:

VP

- Wide range of magnification with **one** eyepiece—zooms for near or distant objects
- Easily adjusts to suit weather and light conditions
- Built-in haze filter

At high power:
- longer shots
- less glare in bright sunlight
- increase in readability
- no glare…high contrast
- blacks and whites stand out

At low power:
- greater field
- brighter field
- decrease of heat waves

We will be pleased to send you further information about both Gurley Optical Plummet Transits and Gurley Variable Power Eyepiece.

Both Optical Plummet and Variable Power are patented.

W. & L. E. Gurley • Union Plaza, Troy, N. Y.

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. . . Publications

Moveable walls

Non-load bearing, floor to ceiling, interior walls that incorporate electrical systems. Laminated with gypsum core and face panels. Details of steel or aluminum framing. Sound data. Specs. 18 pages. United States Gypsum. **372**

Steel roof decks

Super-Rib, ribbed steel roof decks, for purlin spacings of 9 and 12 ft. Load charts and installation data. Specs. 8 pages. Wheeling Corrugating Co. **373**

Built-up roofing

Specifications catalog for all types of decks, flat, steeped, nailable and non-nailable. Base sheet, Special Roofing Bitumen and three felt systems featured. 44 pages. The Ruberoid Co. **374**

Colored aluminum

Design ideas for textured and colored aluminum sheets, panels, pipes and wire for industrial and commercial signs. Chart of specialty and standard-mill fabricated products. 14 pages. Aluminum Company of America. **375**

Fire protected wood

Non-Com treated lumber for framing, floors, walls and roof decking. Pressure impregnated chemicals also ward off decay and termites. 6 pages. Wood Preserving Division, Koppers Co., Inc. **376**

Pressure treated wood

Cellon lumber and plywood, treated under pressure to withstand water and insects. Structural applications, strength and paint tests. Koppers Company, Inc. **377**

Rigid insulation

Fomglas insulation blocks weigh 9 lb per cubic ft, take an average ultimate load of 7 tons per sq ft. For flat roofs, parking decks, gabled roofs, curtain and masonry walls. Properties, insulating values and installation methods. Specs. 20 pages. Pittsburgh Corning Corp. **378**

Roof insulation

Technical data on rigid urethane panels. Comparative C values for various insulations. Physical properties. Specs for five thicknesses. 4 pages. Barrett Division, Allied Chemical Corp. **379**

Steel joist manual

Newly revised Standard Specifications and Load Tables for high-strength open-web steel joists. Three joist types are series J (A36 steel revised minimum yield strength of 36,000 psi), series LA (long-span) and series H (short-span) with minimum yield strengths of 36,000 psi. 52 pages. Steel Joist Institute. **380**

For More Information . . .

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DOUBLE YOUR RATE OF PENETRATION IN 75% OF ALL ROCK WITH THE NEW JOY RPD*

***JOY ROTARY PERCUSSION DRILL** combines rotary and percussion drilling for fastest penetration. The new Joy drill has turned in footage reports that are three times as fast as conventional percussion drills in most formations. In 75% of rock formations it can double your rate of penetration. This performance comes from a relatively new drilling principle. Rotation on the RPD is supplied by a hydraulic motor; percussion is supplied by a high-speed free-piston hammer unit. These elements combine the best features of high speed rotary and percussion drilling to give the fastest penetration possible. Torque and feed pressure can be varied to meet the drilling conditions encountered in mixed formations.

The RPD uses specially designed Joy tungsten carbide bits. Mounted on Joy Hydro Drill Jibs the drill is particularly suited to tunneling operations. For complete information on this new kind of drill mail us the coupon at right, or write for Bulletin 3995-24.

To: JOY MANUFACTURING COMPANY
RPD Section—Oliver Building
Pittsburgh 22, Pa.

Please send me complete information on the Joy Rotary Percussion Drill.

NAME: __________
TITLE: __________
COMPANY: __________
ADDRESS: __________
CITY: __________ ZONE ____ STATE ____

JOY CONSTRUCTION EQUIPMENT IS SOLD AND SERVICED BY THE JOY DISTRIBUTOR IN YOUR AREA

Portable Compressors
Trac Drills
Tungsten Carbide Rock Bits
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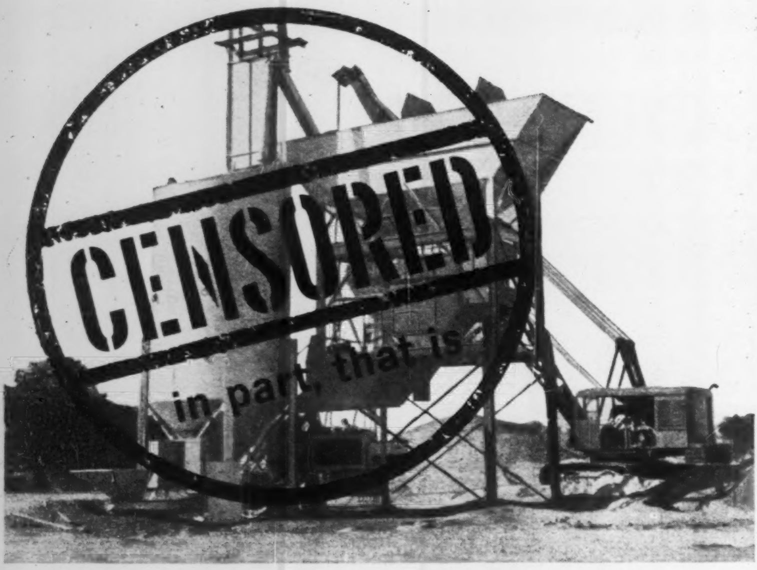
In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario

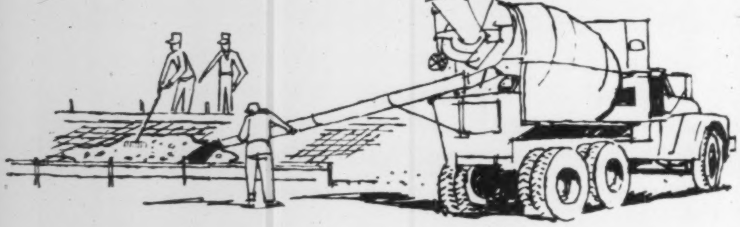


Pouring Ready Mixed up to
252 *Yards per Hour*
for Highway Construction with a

BUTLER **HP-85** PLANT

SOMEWHERE IN U.S.A. At the owner's request we won't identify the job where a BUTLER HP-85 is delivering record-breaking production . . . but the facts are swear-on-a-Bible *true.*

It's a big paving job. Transit mix trucks pour directly into the forms. No pavers.



The owner guaranteed the contractor 150 yards per hour. Actually, the HP-85 is producing 252 yards, hour-in and hour-out. It even surprises us!

Of course, this takes smart, alert management, top-flight co-ordination of trucks, perfect materials flow and a crew with a will. Without these it couldn't be done. But here's the point: management needs a BUTLER HP-85 to attain such a record.

Plant facts: a fully automated Portable HP-85 with a 100 yard cement bin and a 422 bbls. per hour cement elevator. Aggregates are fed with a 24 inch belt conveyor. Trucks carry 6 yards each.

Moral: succeed with a BUTLER HP-85 Portable Plant plus *your* good management.

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Metal lath

Alloy and galvanized steel, expanded lath, with cold-rolled channels. Corner beads and column protection. Fire-resistance ratings. Detail drawings and specs. 8 pages. Wheeling Corrugating Co. **381**

Metal lath

Stainless, galvanized and alloy steel lath. Spacing and fire resistance tables. Also, corner beads, door and window casings, metal bases, studs and channel clips. Detail drawings, specs. 16 pages. Bostwick Steel Lath Co. **382**

Metal vs. gypsum lath

A rebuttal of the Gypsum Association's published claim (ENR Feb. 16, 1961, p. 69) that plaster performs better over gypsum lath than over metal lath. 11 pages. The Metal Lath Association. **383**

Prestressing cable

For pretensioning and post-tensioning prestressed concrete. Two, three and seven-strand bundles of Tuf-Lock (for extra high bond) and Tuf-Strand. Physical properties, elongation parameters and tables. 8 pages. Armco Steel Corp. **384**

Portable wood flooring

Specs for portable maple flooring. For basketball courts, gyms, roller rinks, dance halls, etc. Detail plan of panel construction and fastening. 3 pages. Maple Flooring Manufacturers Assoc. **385**

Steel pipe

Many uses for steel pipe in building and home construction, process industries and equipment design given in 32-page booklet. Tables give structural strengths, weights, dimensions, test pressures and mechanical properties of steel pipe. Wheeling Steel Corp. **386**

Asbestos cement pipe

Asbestos-cement sewer and pressure pipe and couplings described in two four-page folders. Installation instructions, dimensions and specs included. American Mannex Corp. **387**

Wood framing angles

Trip-L-Grip, zinc-coated steel framing anchors. For strong, speedy connections of various wood framing members, joists to beams, corner posts, stairs, etc. Safe load tables. 4 pages. Timber Engineering Co. **388**

Masonry accessories

Stone anchors for limestone and granite facing, brick vents, masonry block reinforcing, cavity wall ties, reinforced concrete slab and beam bolters, etc. Dimensions and descriptions. RKL Building Specialties Co., Inc. **389**

For More Information . . .

. . . Select the publications you want and circle the key numbers (shown at the end of each item) on the inquiry card at the end of this section.

Masonry anchors

Catalog of light and heavy-duty masonry anchors. Includes hammer sets, caulking and expansion bolts, self-drilling anchors, etc. Drilling accessories. 12 pages. The Rawlplug Co., Inc. **390**

Plywood joints

Tongue and groove joints that eliminate need for edge support on subfloor-underlays, roof and wall sheathing. Recommended joint dimensions. 18 pages. Douglas Fir Plywood Association. **391**

Flashings

Design guide for nickel stainless-steel flashings. For walls, roofs, skylights and window sills. Joint details and materials. 24 pages. International Nickel Co., Inc. **392**

Electrical conductors

Catalog of magnetic wire, hook-up wire and coaxial cable conductors. Physical and dielectric properties and specs. Includes heater cable, miniature coaxials, ceramic and extruded teflon insulation. Synopsis of government specs. 58 pages. Hitemp Wires Co. **393**

Corrugated rubber seals

Dual Seal, flexible flange, molded rubber closures. Shaped to match corrugations of rigid panels and siding made of metal, asbestos, etc. 4 pages. Townsend Co. **394**

Flexible tubing

Tubing, ⅜ in. to 2 in. dia and in three weights, described in four-page folder. Tubing can be bent or stretched by hand. Specs and prices given. The Flexaust Co. **395**

Emulsified asphalt

Advantages of Bitumuls Emulsified Asphalt for surface treatment. On-the-job photos show types of applications; tables show quantities required for various surfaces. American Bitumuls & Asphalt Co. **396**

Asbestos admixture

Reprint of a report by the New York State Department of Public Works on the effect of incorporating asbestos fibres in bituminous pavements. 32 pages. Johns-Manville. **397**

Snow melting

Permanent copper pipe installations for snow melting on roadways, bridges, sidewalks, driveways and parking lots. Typical installations and general recommendations. 8 pages. Revere Copper. **398**

For More Information . . .

. . . Select the publications you want and circle the key numbers (shown at the end of each item) on the inquiry card at the end of this section.

Pointing cement

Rezklad pointing cement. Properties, test methods, cost estimating, surface preparation, mixing instructions. 4 pages. Atlas Mineral Products Company. **399**

Corrosion-proof cement

Six cements to protect industrial brick, masonry floors and walls from corrosion. Recommended, conditional, not-recommended applications under exposure to 166 corrosives. Estimating tables. 12 pages. Atlas Mineral Products Co. **400**

Concrete topping

Technical description of Thipoxy 60, a concrete floor topping and patching compound. Applications and placing instructions. List of over 60 corrosive chemicals it resists. 7 pages. Sun Chemical Corp. **401**

Form coating

Technical description of Aggretex F, a water-soluble form coating that produces exposed-aggregate surfaces on concrete. For metal or wood forms. 2 pages. Sun Chemical Corp. **402**

Protective coatings

Primers and coatings for exposed metal, masonry and wood. Resistance chart for 76 chemicals. Plus recommendations for synthetic rubber sealants. 16 pages. David E. Long Corp. **403**

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Steel protection

Solutions to problems in protection of structural steel against corrosion. 8 pages. Steel Structures Painting Council. **404**

Anticorrosive pigments

Permox 1-4-3, a lead-silico-chromate pigment for protection of metal surfaces. For formulation of enamel paints and oil based primer, intermediate and finish coats 8 pages. Eagle-Picher Co. **405**

Installed Equipment

Elevators and escalators

Moving sidewalks, ramps and escalators. Plus passenger, freight and special elevators. Nationwide distributors. 4 pages. Montgomery Elevator Co. **406**

Power plants for shelters

Liquid or air-cooled, gasoline or diesel-powered electric plants for residential fallout shelters. 2,000 to 5,000 watts. Weight 275 to 720 lb. 4 pages. Kohler Co. **407**

Fallout filter systems

Specs for 24 air-filtration kits for home fallout shelters and 8 systems for community and industrial shelters. Installation instructions. Military specs covered. 26 pages. Flanders Filters Inc. **408**

Sewage treatment plant

Small extended-aeration, sewage-treatment plant for shopping centers, institutions, motels, schools and similar establishments. Tables aid in selecting adequate size. 4 pages. Yeomans Brothers Co. **409**

Activated sludge treatment

Equipment for activated-sludge sewage treatment. A high-volume, shallow-depth air diffuser, a turbine aerator, a secondary clarifier and a spiral-contact aeration system. 4 pages. Dorr-Oliver, Inc. **410**

Sewage pumps

Centrifugal wet-pit pumps with capacities ranging from 75 to 1,200 gpm at heads of 10 to 75 ft. 8 pages. Smaller sewage and solids pumps with capacities of 50 to 400 gpm at heads of 10 to 45 ft. 4 pages. Both give dimensions and typical specs. Yeomans Brothers Co. **411**

Water and sewage treatment

Large line of water-purification and sewage-treatment equipment for municipal and industrial use. Special equipment for paper mills and plating mills included. 16 pages. Walker Process Equipment, Inc. **412**

Sludge oxidation units

Flameless sludge oxidation units for small communities. Diagrams show operation and compact layout. 4 pages. Zimpro Div. of Sterling Drug Co. **413**

Flocculation equipment

Handling and feeding equipment for chemical flocculation of sewage. Tables for selection of properly sized tanks and mixing equipment included. 8 pages. Link-Belt Co. **414**

Sludge collectors

Straightline sludge collectors designed for rectangular settling tanks. Diagrams and dimensions of several types of tanks along with details of skimming and pre-aeration machinery. 28 pages. Link-Belt Co. **415**

Waste treatment equipment

Rex line of waste treatment equipment including screens, triturators, grit collectors, sludge collectors, clarifiers, flocculators, separators and skimmers. 8 pages. Chain Belt Co. **416**

Water treatment control

Control of water-treatment plant from a single console in the laboratory—fingertip control over plant flow, chemical additions and filter backwash. Four pages. B-I-F Industries. **417**

Vacuum water filters

Peak water loads handled by vacuum diatomite filters is the subject of three bulletins bound in one cover. Schematics of typical installations with description of operation. B-I-F Industries. **418**

Trickling filter distributors

Rotoline trickling filter distributor described in several applications. Diagrams, charts and tables given to aid in selection of distributor. 16 pages. Link-Belt Co. **419**

Industrial heater

Directaire, packaged heater for centralized heating and ventilating. Oil or gas fired, outputs to 2,000,000 Btu per hour. Complete specs for 10 models. 8 pages. Todd Shipyards Corporation. **420**

Roof top heaters

Centralized heating and air conditioning system for roof top installation. Includes heater, condenser and, if desired, separate fan coil. Design data for outputs up to 1,000,000 Btu per hour. Stacking arrangements, selection parameters and formulas. 36 pages. Lennox Industries, Inc. **421**

School ventilation

Comfort Curtain heating, cooling ventilating system for classrooms. Components include bookcase or wall ducts, ventilator, central hot or chilled water, heat pump, in-room heaters and air conditioner. System operation. Accessories. 23 pages. Lennox Industries, Inc. **422**

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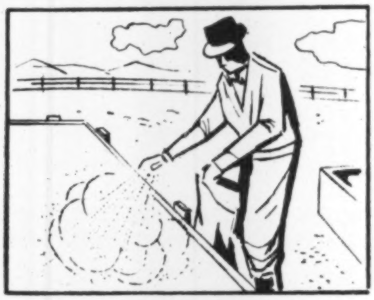
ALPHA

BETTER CONSTRUCTION THROUGH BETTER USE OF CEMENTS

news and notes from the field

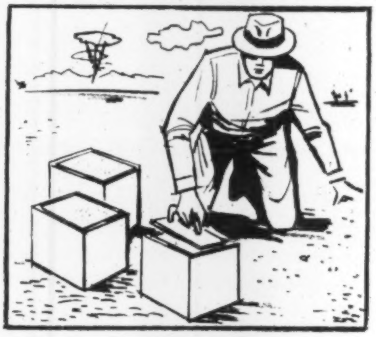
How to Avoid Dark Spots in Concrete

Color variations of dark spots in concrete are not generally serious complaints and do not occur too often, but they can be troublesome. Ofttimes the color difference is so marked that it will appear as though two shades of cement were used; this despite the fact that the same materials were used throughout the job.



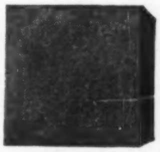
THIS IS WRONG. The practice of dusting on dry cement to hasten drying and make finishing easier should *not* be followed.

Dark spots are most commonly encountered in concrete floors and the cause nearly always stems from sprinkling dry cement on the surface of the slab to make the finishing operation easier. An experiment conducted by Alpha's Field Engineering and Research Group proved this point conclusively.



The test was simple. Three cubes were prepared of cement and standard Ottawa sand. Cube No. 1 was steel troweled in accordance with recommended and accepted practices and placed in the moist room. No. 2 cube was sprinkled with cement, finished with a trowel and then put into the moist room. Cube No. 3 was allowed to approach final set and then was sprinkled with cement and purposely over-troweled. This third cube was allowed to air cure.

1.



2.

3.

The results of this experiment are shown by the above photographs of the three cubes. The first cube presented an attractive, light cement color. The No. 2 cube, on which cement had been sprinkled but which had been placed in the curing room, was quite a bit darker than the first cube. The No. 3 cube was so black it appeared that a coloring had been added to the surface.

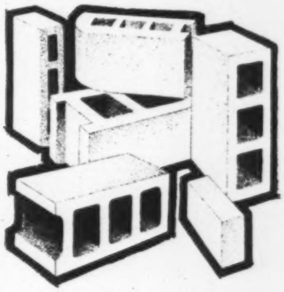
"Black Rain"

When cement is sprinkled on concrete as a drier it sometimes produces the appearance of black rain spots on the concrete after curing is completed.

Cement should *never* be troweled into the surface of concrete. It leads to alligator cracking, paper scaling and to variations in color. The use of cement to make final finishing easier can ruin an entire floor job. It can create extra expense for the owner and annoyance and embarrassment for the contractor.

Variations in curing and uneven pressure in troweling can also produce dark and light areas in the concrete surface.

Holding Uniform Color in Concrete Blocks



The color or shade variation problem is different in the non-plastic mixes of concrete products. Uniformity of color can be affected by variations in cement content, method of curing, texture of block, time of mixing, admixtures used and aggregates. Modern concrete products manufacturers are fully aware of these facts and have good control over such variations.

Alpha Field Engineering ***is a service*** created and maintained for one reason: to provide help and guidance for Alpha customers. This department is made up of engineering graduates thoroughly experienced in all aspects of concreting, and trained and equipped to give you on-the-job service. You can contact the Alpha Engineer in your territory through your nearest Alpha District Office.

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The long-life coating available only on Blaw-Knox Grating. No finish on grating will wear forever. But the exclusive Ponbake finish that is available on Blaw-Knox Electroforged® steel grating lasts longer than any other. Bang it with a hammer. Bombard it with crushed stone. Immerse it in acid and alkali solutions. You won't hurt it. We know because we have tried them all.

Ponbake, a new epon base, high polymer synthetic paint process developed by Blaw-Knox especially for grating, stays factory new almost regardless of the treatment it gets — and it costs less than on-the-job painting.

Want to know more? Write for complete information or ask for a Blaw-Knox grating salesman to show you a sample.

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. . . Publications

Automated heating controls

Centralized control of large heating and air conditioning systems, through automated controls. Breakdown of various components as installed in buildings throughout U. S. 20 pages. Minneapolis-Honeywell Regulator Co. **423**

Aluminum louvers

Fixed or operating air-intake louvers. For vertical, horizontal, decorative and penthouse type installations. Plus cooling tower screens. Section details. Specs. 20 pages. Construction Specialties Inc. **424**

Water meters

Several types of water meters for varied applications with outstanding features of each discussed in a 28-page bulletin. Meter-testing equipment and sediment traps also covered. Neptune Meter Co. **425**

Lighting manual

Complete specs on aluminum incandescent and fluorescent fixtures, for inside or outside use. Coefficients of utilization, candlepower distribution and design details. 110 pages. McPhilben Manufacturing Co. **426**

Street lights

Quadro-liner luminaires have refractors made in four individual quadrants that direct light where needed on streets. 4 pages. Westinghouse. **427**

Fluorescent fixtures

Recessed, surface-mounted and suspended fluorescent fixtures for office and plant. Plus strip lighting, air-diffusing troffers and incandescent down lights. Recommended lamps, foot-candles and specs. 24 pages. Day-Bright Lighting, Inc. **428**

Air troffer manual

Air handling troffers for ventilation around fluorescent lamps. Static pressure, acoustical parameters. Index for integration with manufactured ceilings. Lamp and lens coefficients of utilization. 40 pages. Benjamin Division, Thomas Industries, Inc. **429**

Air distribution

Air-distribution valves, blenders and acoustical and thermal controls. Static pressure drops and sound levels. Specs. 16 pages. Carnes Corp. **430**

Tanks and pressure vessels

Behind-the-scenes look at Nooter Corp.'s facilities for fabricating tanks, pressure vessels and other plate fabricated equipment. Corrosion data for nearly 400 salts and acids on 16 different metals and alloys. 32 pages. Nooter Corp. **431**

For More Information . . .

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. . . *Publications*

Power controller

Electric power controller that regulates current for laboratory purposes described in a two-page flyer. Specs included. Electric Specialty Co. 432

Controlled feeding equipment

A broad line of equipment for controlled feeding of liquids and solids in process industries described in an eight-page catalog. Photographs and diagrams of machines that feed and blend by weight or by volume. Control console included. B-I-F Industries. 433

Drainage fittings

Wall chart lists over 90 items in the manufacturer's line of solder-joint, cast-bronze, drainage fittings. Each item includes description and sizes available. Grabler Mfg. Co. 434

Utility pump

Double-diaphragm, air- or gas-operated pump delivers 1 to 60 gpm. Two flyers give specs., maintenance instructions and recommended uses. Texsteam Corp. 435

Split-case pumps

Split-case horizontal building trades pumps. Capacities up to 2,600 gpm. Head up to 280 ft. Charts give performance data, dimensions. Peerless Pump. 436

Valves and hydrants

Seven brochures totaling 90 pages in ring binder describes lines of gate valves, check valves, release valves, tapping sleeves and valves, and fire hydrants. All sizes gate valves and accessories, flush hydrants, three types fire hydrants and accessories. Ludlow Valve Mfg. Co. 437

Control valve

Eight-page booklet compares Conoflow LB single-seated, split-body control valve with double-seated control valves used in the process industry. Compares time and cost for seat replacement, valve cost and inventory needs. Conoflow Corp. 438

Control valves

Control-valve catalog shows complete line of control valves ranging in size from ¼ in. to 6 in. Explanation of sliding-gate seat. Information on when to use a controller or positioner. Eight pages. OPW-Jordan. 439

Drain or sampling valve

Features, sizes and construction details of drain and sampling valves made for high temperature and highly corrosive conditions. Specifications included. Jerguson Gage and Valve Co. 440

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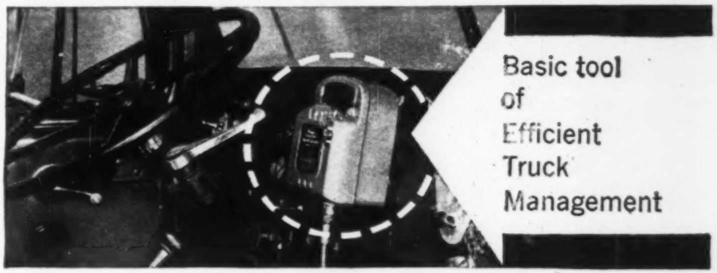

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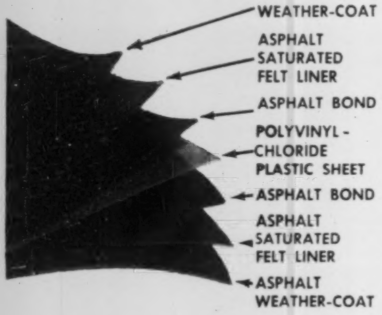
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Ball valves

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Plug valves

Pocket guide describes standard and special plug valves, valve sealants and valve actuators. Gives sizes, types and maximum pressures. 20 pages. Rockwell Mfg. Co. **442**

Gate valves

Rubber-seated, bonnetless, knife-gate valve described in eight-page bulletin that gives materials, dimensions, actuators and outlines broad areas where the valve is used. DeZurik Corp. **443**

Motor protection

Encapsulation for the protection of electric motor windings from environmental conditions. 8 pages. U. S. Electric Motors, Inc. **444**

Methods

Fallout shelter plans

Construction plans and materials lists for family fallout shelters made of clay masonry. Basement (new or existing), above and below ground; also, plans for one above-ground, blast-and-fallout shelter. Definitions, charts on radiation-protection factors in relation to mass thickness of masonry materials. 16 pages. Structural Clay Products Institute. **445**

Prestressing bars

Prestressed concrete applications. Properties of tensioning bars. Accessories. Detail drawings for post-tensioning concrete. Regular and special-grade Stressteel bar specs. Parameters for estimating loss of prestress due to relaxation, friction and wedge seating. Jacketing details, specs. Table of man-hour requirements. 32 pages. Stressteel Corp. **446**

Steel curtain walls

A touch-stone reference for designing high and low-rise buildings in steel panel walls. Properties of steels and alloys, types of finishes. And cross section details of notable installations. 52 pages. United States Steel Corp. **447**

Fire resistance manual

Design data for partitions, floors, ceilings, roof decks and steel columns. Flame-spread values of materials. Fire resistance, sound attenuation, thickness and density of assemblies. Terms defined; isometric details. 29 pages. Gypsum Association. **448**

Air-conditioning chart

Pocket data chart, enclosed in plastic. Has refrigerant weights, volume, enthalpy, pipe size, psychrometric chart, and cost tables. Plus conversion formulas and fixed charges. Carrier Corp. **449**

Area lighting

Engineering reference guide shows how to plan area lighting. 16 pages. Buyers guide presents outdoor lamp line with suggested applications and specs. 30 pages. General Electric Co. **450**

Industrial waste treatment guide

Bulletin deals with the problems of industrial waste treatment—classification of wastes and methods for handling each class. Processes and equipment used are detailed. 16 pages. B-I-F Industries. **451**

Water analysis

Laboratory tests for 28 chemicals plus coliform bacteria, alkalinity, hardness, pH and dissolved oxygen in water described in detail in 78-page booklet. Included is a catalog of all necessary chemicals, laboratory equipment and testing machinery. Hach Co. **452**

Boiler feedwater

"An Introduction to Boiler Feedwater Treatment" tells why impurities must be removed from feedwater and thoroughly discusses how it's done. Tells what damage may be caused by each impurity. 24 pages. Nalco Chemical Co. **453**

Laying concrete pressure pipe

Step-by-step procedure for laying concrete pressure pipe. Each step illustrated by photographs and detail drawings. Deflection data, current tables of pipe sizes, full list of necessary supplies and equipment. 16 pages. Price Brothers Co. **454**

Welding manual

For acetylene and ac-dc welding of hard facings on construction equipment. Hard-surfacing instructions for over 100 items include rod types, amount of coating and method of application. Alloy Rod & Metal Division, Victor Equipment Co. **455**

Corrosion protection

Internal corrosion protection in cooling-water systems discussed in reprints of papers presented at the national meeting of the National Association of Corrosion Engineers and the annual water conference of the Engineers Society of Western Pennsylvania. Nalco Chemical Co. **456**

Guide to valve sizing

Dangers of oversizing and undersizing pressure-reducing valves. Typical examples given. 4 pages. OPW-Jordan Corp. **457**

Valve remote control design

Design manual for valve remote control installations in process industries, ships and power plants. Covers flexible shafting, rigid reach-rod controls and gear boxes. 28 pages. Stow Mfg. Co. **548**

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Miscellaneous

Diesel engines

Description and technical data on Model 50 A series line of diesel engines ranging from 194.6 to 2393 ci in. displacement. 12 pages. Fairbanks, Morse & Co. **460**

Multi-fuel diesels

The story of 12 multi-fuel diesel engines ranging from 20 to 650 hp that will run on anything from #2 diesel oil to jet fuel. Fuel system performance charts and power ranges. 8 pages. Detroit Diesel. **461**

Air cooled diesels

Technical bulletins on a line of air cooled diesel engines ranging from 1.5 hp to 102 BHP and weighing 236 to 1,200 lb. Lister Blackstone. **462**

Machine components

Catalogs and handbooks on V-Belt drives, flexible cushion couplings, automatic clutches, roller chain and sprockets, mechanical power transmission and shaft-mounted speed reducers. Dodge. **463**

Universal joints

Data on numerous types of universal joints for automotive, construction, material handling and industrial equipment. 67 pages. Rockwell-Standard Corp. **464**

Universal joints

Data portfolio on six different types of four sizes of J series universal joints with capacities of 4,250 ft lb to 12,700 ft lb rate static torque. Twin Disc. **465**

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Electrically operated preheaters that can be mounted on most gas or diesel engines. 16 pages. Kim Hotstart. **466**

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To lubricate moving parts of air-operated equipment, air-line oilers with ½-pint to 5-gal capacities; plus adjustable flow. Specs. 2 pages. Gardner-Denver Co. **468**

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Pneumatic and pulsating magnet vibrators to speed flow of materials through hoppers, chutes, etc. Selection data. Vibrator capacity in relation to hopper gage. Specs. 12 pages. Syntron Co. **469**

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508. Road Report: At the Five-Year Mark—Progress on the Interstate Highway System and the materials, methods and equipment used.

509. Italy Builds More Dams—An extensive report on the problems of dambuilding in Italy to bring the impoverished South into balance with the prosperous North.

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Bids Asked—Low Bidders—Contracts Awarded—

NEW ENGLAND

HEAVY CONSTRUCTION—BA

† **Me., Brunswick**—BA 1/16—Dist. P. Wks. Office, 1ND, Rm. 704, 495 Summer St., Boston 10, Mass., SURVIVAL, ESCAPE and EVASION TRAINING FACILITY, Redding Twp., U. S. Naval Air Station, NBy 37407, Spec. No. 37407/61. $100,000-$250,000. Plans deposit $55. CD 9/8/58.

BUILDINGS—BA

Conn., Middletown—BA 1/10—Diocese of Norwich, 201 Broadway, Norwich, Xavier HIGH SCHOOL, Randolph Rd. and Rte. 9. Russell & Gibson & Van Dohlen, 10 Ellsworth Rd., West Hartford, archts. CD 9/12/61.

HEAVY CONSTRUCTION—LB & CA

MAINE—State Hy. Comn., State House, Augusta, Bids opened 12/6, ROAD,

Moores Constr. Corp., 3 Hillcrest St., Gardiner, Me., LB **$375,874**, (7 bidders), b. conc. road 4.75 mi. State Rte. 9, Eddington, FASP S-0281(4), Penobscot Co. CD 11/21/61.

MAINE—State Hy. Comn., State House, Augusta, ROAD,
The Bridge Constr. Corp., 283 Water St., Augusta, Me., CA **$600,294**, (5 bidders), b. conc. road and bridge 4.483 mi. State Rte. 108, Peru, FAP F-022-1(6), Oxford Co. BA 12/6. CD 11/15/61.

† **Kibler & Storer, Inc.**, 74 Main St., Yarmouth, Me., LB **$309,240**, est. $250,000-$500,000, 1 story, 40 x 126 ft. each ADMINISTRATION and OPERATIONS BLDGS., 1 story 40 x 72 ft. GARAGE and STORAGE BLDG., etc. Gulf of Maine Sonobuoy Test Range Facility, NBy-37457, Spec. 37457/61, SOUTH BRISTOL, ME. First Naval Dist., P. Wks. Office, 495 Summer St., Boston, Mass. Alonzo J. Harriman, Inc., 292 Court St., Auburn, Me., archt. BA 12/7. CD 11/17/61.

† **Edward R. Marden Corp.**, 233 Harvard St., Brookline, Mass., LB **$407,000**, POLARIS LAUNCH SYSTEM OVERHAUL ADDN., Naval Shipyard, NBy-37403, Spec. No. 37403/61, Portsmouth Naval Shipyard, PORTSMOUTH, N. H. Dist. Pub. Wks. Office, 1ND, 495 Summer St., Boston 10, Mass. BA 12/8/61. CD 11/16/61.

VERMONT—State Dpt. Hys., State House, Montpelier, Bids opened 12/8, ROAD,
Leo & Roland Leperio, 90 Main St., St. Johnsbury, Vt., LB **$444,274**, est. $450,000, highway, Rte. No. 102, S-0271(4), Maidstone-Brunswick. CD 11/8/61.

VERMONT—State Dpt. Hys., State House, Montpelier, Bids opened 12/8, ROAD,
Perini Corp., 73 Mt. Wayte Ave., Framingham, Mass., LB **$779,666**, est. $800,000, (10 bidders), highway and bridge, Int. Rte. No. 91, 1-91-1(17), Contr. I, Westminster. CD 11/13/61.

John Tocci & Sons, 550 Pleasant St., Watertown, Mass., LB **$259,792**, est. $400,000, Proj. 1286, SERVICE CENTER, Franklin Park, DORCHESTER, MASS. Commonwealth Mass., Metropolitan Parks Div., 20 Somerset St., Boston, Mass. BA 12/5. CD 11/29/61.

Suburban Eng. Co., 115 Herricks Rd., Mineola, N. Y. LB **$308,320**, SEWERAGE PROGRAM, Div. A-2 and A-3, Old Greenwich and Cos Cob Pumping Stations, GREENWICH, CONN. Dpt. Pub. Wks. Town Hall, Greenwich, Conn. BA 12/7/61. CD 11/24/61.

▲ **Perini Corp.**, 73 Mt. Wayte Ave., Framingham, Mass., CA **$3,475,000**, GRAVING DOCK, GROTON, CONN. General Dynamics Corp., Electric Boat Div., Eastern Boat Rd., Groton, Conn. BA 12/4/61. CD 11/28/61.

BUILDINGS—LB & CA

▲ **Turner Constr. Co.**, 38 Newbury St., Boston, Mass., CA **$5,000,000**, EARTH SCIENCE CENTER, East Campus, CAMBRIDGE, MASS. Massachusetts Institute of Technology, 77 Mass. Ave., Cambridge, Mass. BA 11/28. CD 11/6/61.

Ralph Richard Constr. Co., 495 Whiting Ave., Dedham, Mass., CA **$574,024**, est. approx. $560,000, Dexter ELEMENTARY SCHOOL, High St., Rte. 109, DEDHAM, MASS. Town, Supt. Schools, Whiting Ave., Dedham, Mass. BA 11/1. CD 11/6/61, under LB.

Concrete Constr. of Everett, Inc., 165 Chelsea St., Everett, Mass., CA **$621,000**, est. $660,000, Proj. SA 667-2, HOUSING for the ELDERLY, Daniels St., FITCHBURG, MASS. City Housing Auth., 13 Normandy Rd., Fitchburg, Mass. BA 11/27. CD 11/30/61, under LB.

John F. Griffin Co., 34 Regent St., Cambridge, Mass., CA Approx. **$400,000**, PARISH CHURCH and RECTORY, Willett Pond, NORWOOD, MASS. St. Timothy's R. C. Parish, Chancery Office, 1 Lake St., Brighton, Mass. BA 11/3. CD 10/16/61.

N. D. C. Constr. Co., Inc., Mercer Rd., Natick, Mass. CA **$874,700**, est. $750,000, ELEMENTARY SCHOOL, Higgins Crowell Rd., West Yarmouth, YARMOUTH, MASS. Town, Supt. Schools, Main St., Bass River, Mass. BA 10/31. CD 11/6/61 under LB.

Gilbane Bldg. Co., 90 Calverly St., Providence, R. I., CA Est. **$500,000**, OFFICE, South Main St., PROVIDENCE, R. I. International Business Machine Corp., 72 South Main St., Providence, R. I. BA 11/2/61. CD 10/26/61.

Green Manor Constr. Co., Inc., 382 Middle Tpk., West Manchester, Conn., CA Est. **$300,000**, 31,600 sq. ft. MFG. PLANT, Manohasset Site, PUTNAM, CONN. York Research Corp., 1 Research Dr., Stamford, Conn. Landis Gores, 140 Park St., New Canaan, Conn., archt.

Columbia Broadcasting Systems, Inc., 485 Madison Ave., New York 22, N. Y., rejected bids Nov. 3, 1 story LABORATORY ADDN., High Ridge Rd., STAMFORD, CONN. LB **$400,000**. CD 11/13/61, under LB.

Alexander Schnip & Sons, Inc., 107 Forest St., Norwich, Conn., CA Est **$400,000**, 2 story DORMITORY, THOMPSON, CONN. Marianopolis Preparatory School, Thompson, Conn. BA 11/30/61. CD 11/29/61.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

† **D. C., Wash.**—BA 1/3—General Services Admin., Design & Constr., Public Bldgs. service, Room 1308, 18th and F Sts., SOIL INVESTIGATION, Classroom Bldg., Howard University, Job IFB 49389. CD 11/10/61, under Public Buildings.

N. Y., Idlewild—BA 1/4—Chief Engineer, Port of New York Auth., Rm. 1115, 111 8 Ave., New York, Zone 11, Contr. NYA-590.015, TAXIWAY PAVING and LIGHTING in Cargo Service Area, New York International Airport. Plans deposit $30. CD 10/16/61.

† **N. Y., Saratoga**—BA 1/11—U. S. Eng., 111 E. 16 St., New York, Zone 3, main SUB-STATION, SARMCAF-RIP L/I#, 1Z-336B, Saratoga Air Force Station. Plans deposit $5. CD 11/28/61, under LB.

N. Y., Vernon—Bids Asked—Midstate Raceway, Inc., RACE TRACK ADDN., ALTERATIONS. $250,000. James D. Curtin, 112 DeWitt St., Syracuse, archt.

BUILDINGS—BA

▲ **N. Y., Long Beach**—BA 12/28—City, City Hall, West Park Ave., MUNICIPAL BLDG. $2,000,000. Leonard S. Wegman, 235 E. 45 St., New York 17, N. Y., archt. CD 4/4/58.

▲ **N. J., Westfield**—BA 1/4—Hahne & Co., 709 Broad St., Newark, SUPERSTRUCTURE for 100,000 sq. ft. DEPARTMENT STORE, North Ave. $1,000,000. Lathrop Douglass, 518 5th Ave., New York 18, N. Y., archt. Throop & Feiden, 207 E. 37 St., New York 16, N. Y., struct. engrs. H. Bond, 11 W. 42 St., New York 36, N. Y., mach. engr. CD 8/25/61.

N. Y., Poughkeepsie—BA 1/8—Educ. UFSD No. 2, Croft Rd., ELEMENTARY SCHOOL, Spackenkill Area. Over $500,000. Clark & Warren, 85 Market St., archts. Walter S. Ttewman, 322 Central Ave., Albany, elec. engr. Ackerman, Knox, Hayward & Pakan, 54 Market St., struct. engrs. Albert Fentzlaff, Inc., 111 Broadway, New York, Zone 6, mech. engrs.

N. J., Long Branch—BA 1/15—Housing Auth. City Long Branch, Garfield Court, 6 story, 60 unit APARTMENTS for ELDERLY, Proj. NJ No. 87. $750,000. Braun & Mancuso, 191 Broadway, archts. CD 12/7/61.

Pa., Darlington—BA 1/18—Pa. Pub. Sch. Bldg. Auth., 101 S. 24th St., Harrisburg, SECONDARY SCHOOL ADDN., for Northwestern Beaver County Jt. Sch. Board, Proj. No. F1-751, $528,000. Plans deposit $30. B. J. McCandless, 239 4th St., Ellwood City, archt. CD 4/1/60.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, ROADS,

N. Y.—**I. G. DeFelice & Son, Inc.**, Nettleton Ave., North Haven, Conn., CA **$3,112,332**, est. $3,897,000, 9 in. c. conc. pavt. 4.18 mi. (2.28 acc.) misc. work 0.17 mi., H.G.S. comp. beam Delmar By-Pass, Part 1 (Elm Ave. to Rte. 9W), Albany Bethlehem Center, SH 5499 FASH 61-24, FARC 61-157, Proj. U-1129 (2), Albany Co.;

N. Y.—**Green Island Contg. Corp.**, 594 Broadway, Watervliet, N. Y., CA **$1,410,113**, est. $1,662,000, b. conc. 4.51 mi., misc. work 0.04 mi. Cairo-Windham, Part 3, SH 8053, Cairo-Windham, Part 2, SH 5462, Rte. 23, FARC 6-149, Proj. F-1159(5), Greene Co.;

N. Y.—**D. W. Winkelman Co., Inc.**, 300 Long Branch Rd., Syracuse 9, N. Y., CA **$2,036,901**, est. $2,572,000, 9 in. c. conc. pavt. 3.03 mi., misc. work 0.24 mi. 2 HGS Comp. I-beam and plate gird., 1 HGS comp. I-beam Interstate Rte. 505 (Nedrow to Syracuse City Line), Syracuse-Lafayette, SH 5365, Rte. 81 & 11, FISH 61-21, Proj. I-81-2(65), Onondaga Co.;

N. Y.—**Hendrickson Bros., Inc.**, 63 N. Central Ave., Valley Stream, N. Y., CA **$3,775,050**, est. $4,523,000, 9 in. c. conc. pavt. 3.36 mi. 2 HGS twin comp. WF beam bridges, 2 HGS comp. WF beam bridges, misc. work 0.19 mi. Long Island Expwy. Contr. 13, Islip Ave. (Calbe's Path) to Veterans Memorial Hy., FALIE 61-5, Proj. F-862(36), Suffern Co.;

N. Y.—**Gil Wyner Co., Inc.**, 12 Newland St., Malden 48, Mass., CA **$3,604,214**, est. $4,273,000, b. conc. 10.56 mi., misc. work, constr. causeway Whitehall Village; Canal and Broad Sts. SH 5531, Whitehall-Dresden Center, Part 1, SH 5578, South Bay Bridge, SH 9113, Whitehall-Dresden Center, Part 2, SH 563/a, Whitehall-Dresden Center, Part 3; Dresden Center Dresden Station, SH 8132, Dresden Station-Putnam, Rte. 22, SH 8225, FARC 61-154, Proj. F-0371(6), Washington Co.;

N. Y.—**Colonial Asphalt Paving Corp. & Mt. Vernon Contg. Corp.**, 22 W. 1 St., Mt. Vernon, N. Y., CA **$3,596,092**, est. $4,103,000, 8 in. c. conc. pavt., misc. work 0.06 mi. rein.-con. closed box culvert, HGS WF comp. beam, conc. retaining wall Sprain Brook Parkway, Tuckahoe Rd. to Jackson Ave., SBP 61-1, Westchester Co.;

N. Y.—**Grandview Constr. Corp.**, 740 S. Fulton Ave., Mt. Vernon, N. Y., CA **$3,389,315**, est. $3,573,000, 8 in. conc. pavt. 3.95 mi., misc. work 0.27 mi., 2 HGS rein.-con. rigid frame Taconic State Parkway realignment through Mohansic Park, Baldwin Rd. to Crompond Rd., TSP 61-1, Westchester Co.;

N. Y.—**Depew Paving Co., Inc.**, 161 Woodlawn Ave., Depew, N. Y., CA **$1,520,575**, est. $1,725,000, b. conc. 1.74 mi., HGS comp. I beam 4 sps. 251 ft., 2 rein. con. twin box culverts Maple Rd. Exten. (Cr. 192) and separation of grades Maple Rd. Exten. (CR 192) with Powerline Expressway and Lehigh Valley RR FASS 61-10 FIS 61-11, Proj. S 250(3); 1-290-1 (44); 1-291-1(6), Erie Co. BA 11/16. Grand total $22,444,592. CD 11/17/61, under LB.

Nicholas Gallo, Inc., Meadow Glen Rd., Fort Salonga, N. Y., LB **$506,501** (4 bidders), Contr. 2, temporary automatic electric PUMPING STATION southerly side 15 Ave., east of 131 St., force main in 15 Ave. from 130 St. to proposed pumping station; constr. sanitary sewer in 15 Ave. from proposed pumping station to 142 St.; 140 St. from 15 Ave. to point 100 ft. south of 14 Ave.; 14 St. from 15 Ave. to point 95 ft. south of 14th Ave.; 142 St. from 15 Ave. to point 105 ft. south of 14 Ave. and partial GRADING in 140 St. from 14 Ave. to point 280 ft. south of 14 Ave. to point about 160 ft. south of 14 Ave., Third Ward, Queens Boro, NEW YORK. President Queens Boro, Rm. 228, Queens Boro Hall, 120-55 Queens Blvd., Kew Gardens 24, N. Y. BA 12/5. CD 11/21/61.

Comr. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York 21, N. Y., cancelled bids to have been opened Dec. 11, installation aluminum beam type GUIDE RAILING along portions of Shore Parkway and access roads between 68 St. and Bay 34 St., Contr. B-166-461, Brooklyn Boro, BROOKLYN, N. Y. Will re-advertise. CD 12/5/61.

Comr. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York 21, N. Y., cancelled bids to have been opened Dec. 19, aluminum SEAWALL FENCE along Shore Parkway from 69 St. to Bay Parkway, Contr. B-166-361, Brooklyn Boro, BROOKLYN, N. Y. Will re-advertise. CD 12/7/61.

Edenwald Contg. Co., 151-45 6 Rd., Whitestone, N. Y., LB **$257,111**, STREET and YARD IMPRVS., Lafayette Houses, Proj. NY-5-47, Lafayette, Classon, DeKalb and Franklin Aves., BROOKLYN, N. Y. New York City Housing Auth., Rm. 312, 299 Broadway, New York 7, N. Y. BA 12/5. CD 11/16/61.

▲ **Atlantic Gulf & Pacific Co.**, 15 Park Row, New York 38, N. Y., LB **$4,736,900** (4 bidders), HYDRAULIC FILL for southerly extension of RUNWAY

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000; other public works $88,000; Industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported n low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

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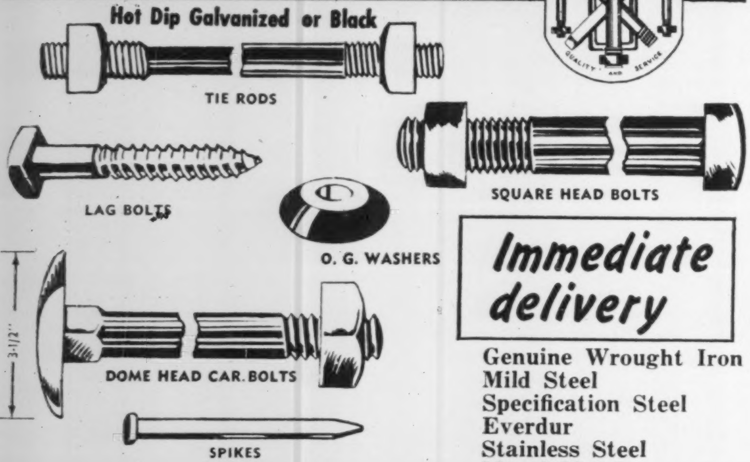

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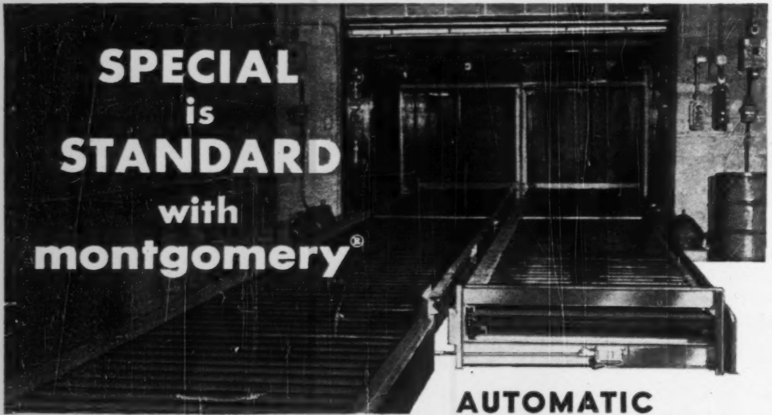

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4L-22R, New York International Airport, Contr. NYA-490.003, IDLEWILD, N. Y. Port of New York Auth., Rm. 1100, 111 Eighth Ave., New York 11, N. Y. BA 12/7. CD 11/14/61.

Lizza & Sons, Inc., 152 South St., Oyster Bay, N. Y., CA **$571,373**, Contr. 1077-W-1, IMPRVT. Milburn Creek PARK, dredging, bridge, bulkhead, boat basin and parking field, Baldwin and Freeport, Town of Hempstead, MINEOLA, N. Y. Dpt. P. Wks. Nassau Co., Old County Court House, Franklin Ave., Mineola, N. Y. BA 11/21. CD 11/24/61, under LB.

NEW JERSEY—State Hy. Dpt., 1035 Parkway Ave., Trenton, ROAD,

South Jersey Constr. Co., 207 Adams, Riverside, N. J., CA **$932,056**, widening, resurf. and drainage U.S. Rte. 322, Sections 10A and 11B, from Williamstown to Cecil, Gloucester Co. BA 11/9/61. CA 12/6/61. CD 11/13/61, under LB.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton, BRIDGE,

Cayuga Constr. Corp., 30 Vesey St., New York, N. Y., CA **$1,382,024**, constr. Interstate Rte. 80 bridge over Hackensack River, Bergen Co. BA 11/8/61. CA 12/6/61. CD 11/10/61, under LB.

▲ **NEW JERSEY**—State Hy. Dpt., 1035 Parkway Ave., Trenton, ROAD,

L. Zimmerman & Sons, Inc., 278 Hillside Ave., Hillside, N. J., CA **$1,058,750**, barrier, curb, resurf. and turnarounds U.S. Rte. 22, Sections 10B and 11A from Middle Brook to Washington Ave., Somerset Co. BA 11/2/61. CA 12/6/61. CD 11/6/61, under LB.

Port of New York Auth., 111 8th Ave., New York, Zone 11, N. Y., rejected bids Nov. 2, Contr. EP-110.020, Elizabeth-Port Authority Piers, FIRE PUMPING STATION and WATER STORAGE TANKS, ELIZABETH, N. J. LB **$672,570**. CD 11/6/61, under LB.

Crossroads Constr. Corp., 2201 43 St., North Bergen, N. J., LB **$596,058** (6 bidders), INTERCEPTOR SEWER, Ernston Rd.; DRAINING Bordentown Ave. and Washington Rd.; PUMPING STATIONS, SAYREVILLE, N. J. Borough of Sayreville, Municipal Bldg., Sayreville, N. J. BA 12/5/61. CD 11/24/61.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg, ROAD,

Collins & Maxwell Road-Builders, Inc., Easton, Pa., CA **$1,050,140**, 19,474 ft. constr. divided hy., consisting of the widening existing pvt. with plain base and 2 bridges, T.R. 309, Lehigh and Bucks Counties. BA 11/10/61. CD 11/14/61.

C & T Affiliates, Collingswood, N. J., LB **$465,141**, Contr. 1, SANITARY SEWERAGE SYSTEM, PENNDEL, PA. Penndel Municipal Auth., Penndel, Pa. Glace & Glace, 2771 Paxton St., Harrisburg, Pa., engrs.;

Tri-County Constructors, Inc., North Hills, Pa., LB **$284,277**, SEWAGE TREATMENT PLANT and SEWAGE PUMPING STATIONS, Contr. 2, (Penndell, Pa.).

▲ **Buckley & Co.**, 1317 S. Juniper St., Phila., Pa., LB **$1,623,814**, Bid 2873, Mill Creek SEWER RECONSTR., PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. BA 12/5/61. CD 10/30/61.

Williard, Inc., Germantown and Sedgley Aves., Phila., Pa., CA **$818,000**, MECHANICAL CONSTR. and STEAM DISTR., CENTRAL HEATING PLANT, for Temple University, PHILA., PA General State Auth., 18th and Herr Sts., Harrisburg Pa. BA 11/15/61. CD 11/20/61, under LB.

▲† **General Services Admin., Design and Constr. Division**, Pub. Bldgs. Service, 12th Floor West, 250 Hudson St., New York 13, N. Y., rejected bids Oct. 27, Phase II, AIR-CONDITIONING at U. S. Post Office and Courthouse, PITTSBURGH, PA. LB **$2,677,000**. CD 10/31/61, under LB.

† **Charles R. Scrivener Co.**, 240 S. Hilton St., Baltimore 29, Md., LB **$388,000**, (9 bidders), AIR FIELD FACILITIES, Hangar No. 2, AIR CRAFT PAVING, WASH AREA, ENG-18-020-62-19, FORT GEORGE G. MEADE, MD. U. S. Eng., 24 St. and Maryland Ave., Baltimore 18, Md. Strobel & Salzman, 70 W. 40 St., New York 18, N. Y., engrs. BA 12/7. CD 11/15/61.

BUILDINGS—LB & CA

Gorlin-Okun, Inc., 112 E. 19 St., New York 3, N. Y., LB **$882,000**, (9 bidders), general contract ELEMENTARY SCHOOL, St. Marks Ave. and School St., BELLMORE, N. Y. Bd. Educ. UFSD No. 7, Winthrop Ave., Bellmore, N. Y. BA 12/8. CD 11/28/61.

▲† **Malan Constr. Corp.**, 2 Park Ave., New York 16, N. Y., CA **$1,922,500**, BLDG. 4653 AEF 2503 for U. S. Atomic Energy Commission, Brookhaven National Laboratory, Upton, BROOKHAVEN, N. Y. Lummus Co., 146-246 Haynes Ave., Newark 5, N. J. BA 10/16. CD 10/19/61, under LB.

▲ **Mathias Gruszecki**, 185-01 Hillside Ave., Jamaica, N. Y., Owner Builds, **$1,110,000**, 7 story, 137-unit APARTMENT, 178 St. between 88 and 89 Aves., JAMAICA, N. Y. Herbert & Clarence Lilien, 1841 Broadway, New York 23, N. Y., archts.

▲ **Columbia Home Builders, Inc.**, c/o Herman A. Luber, 103 Zoerb Rd., Cheektowaga, N. Y., Owner Builds, **$1,550,000**, First Year $700,000 (2 years to complete), 72 HOMES, adjacent to Lancaster High School, LANCASTER, N. Y.

▲ **Thompson-Starrett Constr. Co., Inc.**, 254 W. 54 St., New York 19, N. Y., CA **$4,000,000**, 9 story, U-shaped, 152-unit Neptune Towers Oceanfront COOPERATIVE APARTMENT, on the Boardwalk at Neptune Blvd., LONG BEACH, N. Y. Neptune Terrace, Inc., c/o Taylor International, 420 Lexington Ave., New York 17, N. Y. Paul & Jarmul, 89-51 164 St., Jamaica, N. Y., archts. Herman Scherr, 18 John St., New York 6, N. Y., mech. engr. Abrahams, Hertzberg, Cantor, 307 E

37 St., New York 16, N. Y., struct. engrs. CD 9/16/60.

Blitman Constr. Corp., 101 Park Ave., New York 17, N. Y., CA **$400,000,** 2 story, 112 x 200 ft. AUTO SHOW ROOM ADDN. and GARAGE, 1113-1127 York Ave. and 435 E. 60 St., NEW YORK, N. Y. A & G Holding Corp., c/o Missac Thompson, 71 Midwood St., Cranston, R. I. Leo V. Berger, 356 Fulton St., Brooklyn 1, N. Y., archt. A. H. Tischer, 101 Park Ave., New York 17, N. Y., struct. engr. General Motors, lessee.

▲ **Catholic Center at New York University,** 2 Washington Sq. N., New York, N. Y., rejected bids Aug. 22, 4 story Catholic STUDENT CENTER, Washington Sq. Campus, NEW YORK, N. Y. **$1,225,000.** CD 8/18/61.

Alexander & Daniel Cole, 201 E. Mosholu Parkway, New York 67, N. Y., Owner Builds, **$700,000,** 7 story, 63 unit APARTMENT, Bainbridge and Van Courtlandt Aves., Bronx Boro, NEW YORK, N. Y. Herbert & Clarence Lilien, 1841 Broadway, New York 23, N. Y., archts.

Fleet Grand Realty Corp., 1234 Midland Ave., Bronxville, N. Y., Owner Builds, **$700,000,** 9 story APARTMENT, 579-581 W. 215 St., NEW YORK, N. Y. Joseph H. Belfatto, 220 E. 42 St., New York 17, N. Y., archt. Galow & Gordon, 25 W. 43 St., New York 36, N. Y., engrs.

Walter Sakow, 2171 Bogart Ave., New York 62, N. Y., Owner Builds, **$500,000,** 7 story APARTMENT and STORE, Lydig and Williamsbridge Aves., Bronx Boro, NEW YORK, N. Y. Herbert & Clarence Lilien, 1841 Broadway, New York 23, N. Y., archts.

Schnurmacher Bros., 1114 First Ave., New York 21, N. Y., Owner Builds, **$830,000,** 6 story 88 x 184 ft. APARTMENT, 202-208 W. 19 St., 201-205 W. 18 St., NEW YORK, N. Y. CD 10/26/61.

▲ **Irving and Hyman Shapiro,** 20 E. 46 St., New York 17, N. Y., Owner Builds, **$5,250,000,** 20 story, penthouse 354 unit rein.-con. APARTMENT, 7 Ave., W. 14 and W. 15 Sts., NEW YORK, N. Y. CD 6/22/61.

Leo Silver & Sons, 1841 Broadway, New York 23, N. Y., Owner Builds, Est. **$475,000,** 7 story, 43 unit APARTMENT, Riverdale Ave. and W. 256 St., Bronx Boro, NEW YORK, N. Y. Herbert & Clarence Lilien, 1841 Broadway, New York 23, N. Y., archts.

▲ **Spitzer & Assocs.,** c/o Wechsler & Schimenti, archts., 118 E. 25 St., New York 10, N. Y., Owner Builds, 20 story, penthouse APARTMENT, 1020 Park Ave. and E. 85 St., NEW YORK, N. Y.

▲ **The John W. Cowper Co., Inc.,** 1945 Sheridan Dr., Buffalo, N. Y., LB **$1,427,000,** (3 bidders), general contract HIGH GRADE PATIENTS COTTAGES, BLDGS. 40-47, School for Mentally Retarded & Childrens Psychiatric Hospital, WEST SENECA, N. Y. State Dpt. P. Wks., State Office Bldg., Albany, N. Y. CD 1/17/61.

▲ **Joseph Mallozzi,** Katherine Dr., Bound Brook, N. J. Owner Builds, **$1,000,000,** 26 HOUSES, Katherine Dr., Warren Twp., BOUND BROOK, N. J. Lester Cohen, 234 Clinton Pl., Hackensack, N. J. and Silberstein & Silberstein, 24 William St., Newark, N. J., archts.

▲ **Joseph Malozzi,** Katherine Dr., Warren Twp., Bound Brook, N. J., CA Est. **$1,200,000,** 30 HOUSES, King George Rd., Warren Twp., BOUND BROOK, N. J. Cyril Canright, King George Rd., R. D., Bound Brook, N. J. Silberstein & Silberstein, 24 William St., Newark, N. J., archts.

† **Vertex Constr. Corp.,** 185 Madison Ave., New York 16, N. Y., CA **$526,388,** PLASTIC RESEARCH LABORATORY ADDN., Picatinny Arsenal, ENG-30-075-62-47, DOVER, N. J. U. S. Eng., 111 East 16th St., New York 3, N. Y. BA 11/21/61. CD 11/24/61, under LB.

Herbert Zimelis, 1022 Ironbound Ave., Plainfield, N. J., Owner Builds, **$600,000,** 32 unit GARDEN APARTMENT, Amboy Ave., FORDS, N. J. Erwin Gerber, 11 Commerce St., Newark, N. J., archt.

▲ **A. Kerzner, Inc.,** 702 Summit Ave., Jersey City, N. J., LB **$1,085,774,** est. $1,395,000, general contract FOOD SERVICE and DORMITORY BLDG., incl. EXTENSION HEATING PLANT, Jersey City State College, Boulevard, JERSEY CITY, N. J. Division Purchase & Property, State Treasurer, Office State House, Trenton, N. J. BA 11/28/61. CD 11/17/61.

Purcell Bros., 171 Preston St., Ridgefield Park, N. J., CA St. Joseph SCHOOL, Pavonia and Magnolia Aves., JERSEY CITY, N. J. Newark Diocese, 33 Mulberry St., Newark, N. J. BA 11/6/61. CD 10/25/61.

▲ **Edward Reisen,** 1070 Morris Ave., Union, N. J. Owner Builds, **$1,000,000,** 76 unit APARTMENT, Maplewood Plaza, MAPLEWOOD, N. J. Chas. Wagner, 983 Stuyvesant Ave., Union, N. J., Robt. Anderson, 515 Walnut St., Roselle Park, N. J., and Roman Chapelsky, 329 Rosehil Pl., Elizabeth, N. J., archts.

Mazur Constr. Co., 69 Chryste St., New York, N. Y., CA Est **$400,000,** RESTAURANT, Springfield Ave., MAPLEWOOD, N. J. Moishe's Restaurant, 223 Clinton Pl., Newark, N. J. CD 12/12/61, under Melamed Realty Co., as owner.

▲ **Herbert Zimelis,** 1022 Ironbound Ave., Plainfield, N. J., Owner Builds, **$2,500,000,** 90 HOUSES, South Moetz Drive, MILLTOWN, N. J. Erwin Gerber, 11 Commerce St., Newark, N. J., archt.

Fox Manor Homes, 217 East Maple Ave., Moorestown, N. J., Owner Builds, **$400,000,** RESIDENTIAL DEVELOPMENT, Chestnut and Maple Aves., MOORESTOWN, N. J. David Zunernadel, 34 S. 17 St., Phila., Pa., archt.

Leonard Kalecki, 12 Calumet Ave., Rahway, N. J., Owner Builds, **$600,000,** GARDEN APARTMENTS,

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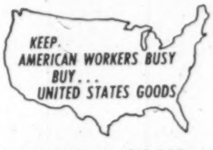

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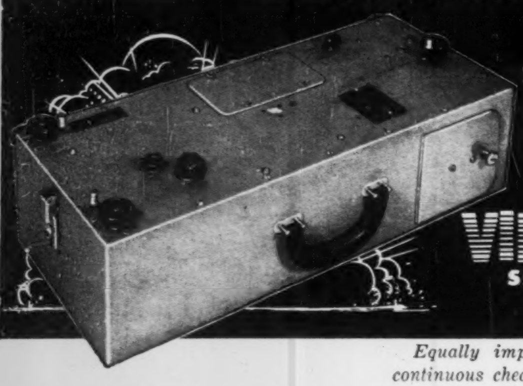

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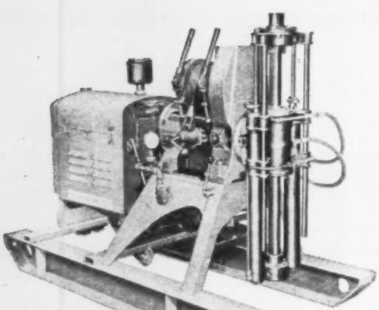

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Hill Rd., PARSIPPANY-TROY HILLS, N. J. Kordys & Oldziey, 1379 Hamburn Tp., Wayne, N. J., archts.

Donald Aronow, 1441 Morris Ave., Union, N. J., Owner Builds, **$450,000**, GARDEN APARTMENT, Rte. 440, PERTH AMBOY, N. J. Edwin Gerber, 11 Commerce St., Newark, N. J., archt.

▲ **Matthews Constr. Co.**, 296 Alex St., Princeton, N. J., CA Est. **$1,200,000**, Charles W. Caldwell FIELDHOUSE, PRINCETON, N. J. Princeton University, Nassau St., Princeton, N. J. Steinmann, Cain & White, 101 Park Ave., New York, N. Y., archts. CD 11/17/60.

Joseph Dunn & Frank Racioppi Port Lumber Co., Bay Ave., Newark, N. J., Owner Builds, **$750,000**, 20 HOUSES, Mount Cedar Ave., WALLINGTON, N. J. H. B. Southern, 571 East Hacelwood Ave., Rahway, N. J., archts.

Webster Homes, Inc. & Legion Manor, Inc., 175 Market St., Patterson, N. J., Owner Builds, **$600,000**. 20 HOUSES, Black Oakridge Rd., WAYNE, N. J. Bernard DiPaola, 29 Church St., Paterson, N. J., archt. Canger Engineering Co., 6-20 Plaza Rd., Fair Lawn, N. J., engr.

William Sterling & Co., Inc., 26th and South Sts. Phila., Pa., CA **$500,000**, 60,000 sq. ft. SHOPPING CENTER, Shoenersville Rd., ALLENTOWN, PA. Richard Development Corp., 60 E 56th St., New York, N. Y. Harold D. McNeik & Assocs., 12 N. 7th St., Allentown, Pa., archts.

Alger-Rau & Associates, Inc., 17024 Miles Ave., Cleveland, O., LB **$671,380**, general contract 3 story DORMITORY, Clarion State College, Proj. No. 404-10, CLARION, PA. General State Auth., 18th and Herr Sts., Harrisburg, Pa. BA 12/6/61. CD 11/9/61.

Arthur S. Gelsman, Wyncote, Pa., Owner Builds, **$500,000**, APARTMENT DEVELOPMENT (72 units), Chestnut St., DOWINGTON, PA. Edward Geddes, 4922 City Line Ave., Phila., Pa., archt.

▲ **Aberthaw Constr. Co.**, 60 State St., Boston, Mass., CA Est. **$2,000,000**, 114,000 sq. ft. RESEARCH and DEVELOPMENT LABORATORY, King of Prussia Industrial Park, KING OF PRUSSIA, PA. Pennsalt Chemical Corp., 3 Penn Center, Phila. 2, Pa. Cabot & Forbes Associates, Inc., 60 State St., Boston, Mass., and Wigton Abbott Corp., 1225 South Ave., Plainfield, N. J., archts.

▲ **Leonard Polis**, Hatboro, Pa., Owner Builds **$1,080,000**, RESIDENTIAL DEVELOPMENT (90), Church Rd., LANSDALE, PA.

▲ **McCloskey & Co.**, 1620 N. Thompson St., Phila., Pa., CA **$12,000,000**, 518 units, APARTMENT, Rittenhouse Square, PHILA., PA. Rittenhouse Square Corp., 1620 W. Thompson St., Phila., Pa. Milton Schwartz, 1721 Walnut St., Phila., Pa., archt.

McCullough-Howard & Co., Inc., 209 N. 16th St., Phila., Pa., LB **$822,000**, general contract conversion of warehouse into CLASSROOM and LABORATORY, for Drexel Institute of Technology, 32nd and Chestnut Sts., PHILA, PA. General State Auth., 18th and Herr Sts., Harrisburg, Pa. BA 12/6/61. CD 10/31/61.

▲ **Sutter Corp.**, Nescopeck, Pa., LB **$1,622,820**, general contract 2 story SCHOOL, Percy St. at 7th Ave., SOUTH WILLIAMSPORT, PA. South Williamsport School Auth., 555 W. Mountain Ave., South Williamsport, Pa. BA 12/6/61. CD 11/29/61.

Parkville Homes, Inc., 8326 Harford Rd., Baltimore 14, Md., Owner Builds, **$422,500**, 25 brick DWELLINGS, Harwood Manor Development north of BALTIMORE, MD.

▲ **Robert Silverman**, 8809 Montgomery Ave., Chevy Chase, Md., CA **$2,080,000**, 208 unit Carrollan APARTMENT, Riverdale Rd. and Rte. 50, LANHAM, MD. Carrollan Joint Venture, Inc., c/o Colonial Investment Co., 1421 I St. N.W., Wash., D. C.

▲ **Maryland City Corp.**, Rte. 2, Box 300, B, Laurel, Md., CA Est. **$2,202,420**, 177 single family HOUSES, Maryland City between Fort Meade and Laurel, Lots 1 through 72, Block 1 and Lots 1 through 105, Block 2, LAUREL, MD. Maryland Escrow, Inc., St. Paul and Lexington Sts., Baltimore 2, Md.

▲ **Marlow Assocs.**, 1028 Connecticut Ave. N.W., Wash., D. C., Owner Builds, **$1,260,000**, (3rd section), 2 and 3 story 4 bldgs. 126 units Marlow Overlook APARTMENTS, Dallas Pl., Marlow Heights, Silver Hill, SUITLAND, MD. CD 10/2/61.

Victor Beauchamp, Inc., 431 Cedar St. N. W., Wash., D. C., CA Est. **$600,000**, MEN'S DORMITORY, WASH., D. C. Catholic University of America, 620 Michigan Ave. N. E., Wash., D. C. BA 8/29/61. CD 9/14/61, under LB.

▲ **Badger Mfg. Co.**, 230 Bent St., Cambridge, Mass., CA oxo alcohol PLANT, DELAWARE CITY, DEL. Tidewater Oil Co., 79 New Montgomery St., San Francisco, Calif. CD 5/8/61.

SOUTH

HEAVY CONSTRUCTION—BA

† **Fla., Jacksonville**—BA 12/27—Procurement Section, SW-428, Federal Aviation Agency, P.O. Box 1689, Fort Worth, Tex., constr. ASR-4 BLDG., steel antenna tower underground duct system and other related items for Jacksonville ASR-2 modification, Imeson Airport, Proposal SW-62-109.

† **Fla., Miami**—BA 12/27—Procurement Section, SW-428, Federal Aviation Agency, P.O. Box 1689, Fort Worth, Tex., relocation of INSTRUMENT LANDING SYSTEM, approach light system and sequence flashing light system, Miami International Airport, Proposal SW-62-92.

† **Va., Gravelly Point** — BA 12/27 — Federal Aviation Agency, 16th and Constitution Ave. N.W., Wash., D. C., REPLACING SANITARY SEWERS, Washington National Airport, 96-2-97581. CD 5/4/56.

† **Va., Virginia Beach** — BA 12/28 — Commander Fifth Coast Guard Dist., Federal Bldg., Portsmouth, MICROWAVE TOWER and APPURTENANCES, Proj. 59-62.

† **Virginia**—BA 1/3—Robert E. Lee Soil Conservation Dist., Amherst, WATER RETARDING DAM, Muddy Creek Site 1, Buckingham and Cumberland Counties; WATER RETARDING DAM, Muddy Creek Site 2, Buckingham and Cumberland Counties, for Soil Conservation Service. CD 5/29/61.

† **Fla., Cocoa**—BA 1/4—U. S. Eng., P.O. Box 4970, Jacksonville, Zone 1, RELOCATION OF UTILITIES for Pad 36B, Cape Canaveral Missile Test Annex, Air Force Missile Test Center, Patrick Air Force Base. ENG-08-123-62-23. CD 11/3/61, under LB.

† **La., Shreveport**—BA About 1/9—U. S. Eng., P.O. Box 867, Little Rock, Ark., WAREHOUSE, BASE and SUPPLY-ISSUE, Barksdale Air Force Base, ENG-41-443-62-58. $200,000. Plans deposit $8. CD 8/1/60.

† **Louisiana**—BA 1/9—U. S. Eng., foot of Prytania St., New Orleans, ENLARGEMENT of Bayou Hokely Pumping Station, vicinity of Franklin, St. Mary Parish, Serial No. CIVENG 16-047-62-81. $300,000. Plans deposit $2.

Ky., Louisville—BA 1/10—Metropolitan Sewer Dist., 412 W. Market St., First Phase, Highgate Springs-Terrier Lane SEWER and DRAINAGE PROJ. $488,000. CD 3/15/56.

† **Fla., Cocoa**—BA 1/15—U. S. Eng., P.O. Box 4970, Jacksonville, Zone 1, G/M DATA COLLECTION RADAR STATION (AN/FPQ-6) **(a)** 2 story conc. frame, concrete block, 3,576 sq. ft. bldg. **(b)** 365 sq. ft. addn. to existing electrical vault **(3)** antenna tower foundation **(d)** rein.-con. bore site tower **(e)** rein.-con. Optical Tracker foundation **(f)** clearing, grubbing **(g)** chain link fencing **(h)** flexible pavement **(i)** sidewalks **(j)** grassing **(k)** water lines **(l)** sanitary gravity sewers, Air Force Missile Test Center, Patrick Air Force Base, ENG-08-123-62-47. $200,000. CD 10/6/61.

▲† **Fla., Homestead**—BA 1/16—Director, Southeast Division, Bureau Yards & Docks, Bldg. No. 13, U. S. Naval Base, Charleston, S. C., RADIO DIRECTION FINDER FACILITY, incl. 2 story bldg. antenna arrays, high and low frequency band antennas, reflector screens, grounding system, utilities and paving U. S. Naval Radio Direction Finder Station, Homestead Air Force Base, NBy-37733, Spec. 37733/61. Over $1,000,000.

† **Virginia**—BA 2/6—U. S. Eng., Huntington Dist., 508 8th St., Huntington, W. Va., ROAD to DIVERSION TUNNEL, John W. Flanagan Reservoir, Pound River, CIVENG-46-022-62-24B. CD 12/11/61.

BUILDINGS—BA

S. C., Spartanburg—BA 1/4—Converse College, E. Main St., 35,350 sq. ft. CLASSROOM, $525,000. Lockwood Greene Engineers, Inc., Montgomery Bldg., archt. CD 2/16/61.

N. C., Charlotte—BA 1/11—Mecklenburg Co. Bd. Educ., 720 E. 4th St., 87,000 sq. ft. Statesville Rd. JUNIOR HIGH SCHOOL, $875,000. Biberstein, Bowles, Meacham & Reeds, Inc., 1427 Elizabeth Ave., archt.

Ky., Burnside—BA 1/30—East Kentucky Rural Electric Co-operative Corp., Lexington Rd., Winchester, Contr. B127, SUBSTRUCTURE and UNDERGROUND CONSTRUCTION of FDNS. for 150x25 ft. 100-MW Steam Electric Generating Station, incl. turbine, boiler, coal pulverizer, stack, and misc. equipment fdns.; column footings; three concrete underground coal hoppers; installation 42 and 60 in. circulating water reinforced concrete pipe, 4,000 cu. yd. rock excav. and 6,000 cu. yd. earth excav. $600,000. Plans deposit $15. Stanley Engineering Co., Hershey Bldg., Muscatine, Iowa, engr.

BUILDINGS—SLC

▲ **S. C., Greenville**—Wade Hampton Shopping Center, Inc., 417 E. North St., soon lets contract 128,000 sq. ft. SHOPPING CENTER. $1,200,000. Townes & Murphy, North Gardens Bldg., archts. CD 3/7/61.

HEAVY CONSTRUCTION—LB & CA

† **E. C. Ernst, Inc.**, 9 Reservoir Rd., Denbigh, Va., CA **$319,733**, POWER SUPPLY for Hypersonic Aerothermal Facility, Proj. L-1955, LANGLEY FIELD, VA. National Aeronautics & Space Admin., Bldg. 1195, Langley Field, Va. BA 11/14/61, CA 12/5/61. CD 11/22/61, under LB.

FLORIDA—State Road Dpt. of Florida, Room 228, Holland Bldg., Tallahassee, ROAD,

White Constr. Co., Inc., Chiefland, Fla. CA **$676,682**, grading, limerock base, Type I b. conc. surf. cse. binder cse. approx. 11,456 mi. between point approx. 0.4 mi. southeast of Live Oak and Suwannee-Columbia County Line, Federal Aid Proj. No. F-006-4(9) (Job No. 37010-3501), SR 10 (US 90), Suwannee Co. BA 11/21/61, CA 12/5/61. CD 11/27/61, under LB.

W. L. Cobb Constr. Co., 34th St. North and 22nd Ave., St. Petersburg, Fla., LB **$263,339**, STREET IMPRVS., CLEARWATER, FLA. City, City Hall, Clearwater, Fla. BA 124/61. CD 7/14/60.

† **Abbey Installations, Inc.**, 232 Varet St., Brooklyn, N. Y. CA **$296,277**, SHOP PLATING DEPOT, Patrick Air Force Base, ENG-08-123-62-20, COCOA, FLA. U. S. Eng., Box 4970, Jacksonville, Fla. CD 11/14/61, under LB.

† **Structural Material, Inc.**, 1550 S. Dixie Hy., Miami, Fla., LB **$479,779**, est. $539,919, CENTRAL SHOP and MAINTENANCE FACILITIES, Patrick Air Force Base, ENG-08-123-62-29, COCOA, FLA. U. S. Eng., P.O. Box 4970, Jacksonville, Fla. BA 12/6/61. CD 11/8/61.

▲ **Bd. Comrs. Dade Co.**, 9th Floor, County Courthouse, Miami, Fla., rejected bids Nov. 20, sheet steel BULKHEAD, Dodge Island, Biscayne Bay South of MacArthur Causeway, MIAMI, FLA. LB **$1,690,972**. Will re-advertise. CD 11/27/61, under LB.

C. T. Dawkins, Inc., 420 S. Rome Ave., Tampa, Fla., LB **$205,854**, STORM SEWERS, Lemon St., Lincoln Ave., Matanzas St., LaSalle St., Grace St., MacDill Ave., TAMPA, FLA. City, City Hall, Tampa, Fla. BA 12/5/61.

Alpha Constr. Co., Tuloma Bldg., Tulsa, Okla., CA **$671,902**, TELEPHONE LINES, Heflin, Cleburne and Randolph Counties, ALABAMA. Tri-County Telephone Co., Inc., Ashland, Ala. BA 11/7/61. CD 11/15/61, under LB.

† **Goslin-Birmingham Mfg. Co., Inc.**, 3521-10th Ave. N., Birmingham, Ala., CA **$412,000**, OPERATING MACHINERY for Wheeler Dam Lock, ALABAMA. Tennessee Valley Auth., New Sprankles Bldg., Knoxville, Tenn. CD 12/2/60.

▲† **Pearce & Gresham Constr. Co.**, 202½ Second Ave., Decatur, Ala., CA **$1,470,487**, SATURN TEST FACILITY, CONTROL CENTER, George C. Marshall Space Flight Center, Proj. 62-23, HUNTSVILLE, ALA. National Aeronautics & Space Admin., George C. Marshall Space Flight Center, Huntsville, Ala. BA 11/30/61. CD 11/14/61.

† **Service Constr. Co.**, Greenwood, Miss., CA **$199,664**, 5 WATER RETARDNG DAMS, Potacocowa Creek Watershed, near Carrollton, Carroll Co., MISSISSIPPI. Soil Conservation Service, Dpt. Agriculture, P.O. Box 610, Jackson, Miss. BA 12/4. CD 11/10/61.

▲ **Broadwater Beach Hotel**, W. Beach Blvd., Biloxi, Miss., Owner Builds, **$1,000,000-$2,000,000**, 70 acre MARINA, front of Broadwater Beach property south, U. S. Hy. 90, BILOXI, MISS. CD 8/17/61.

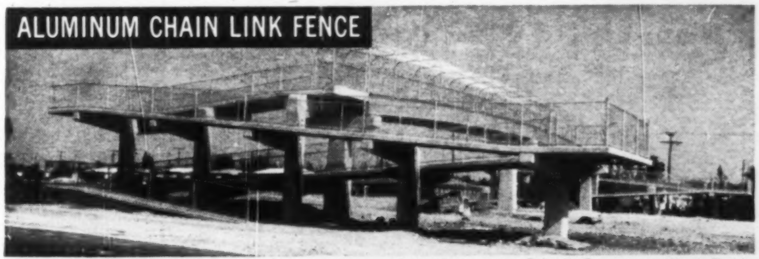
Delta Constr. Co., Box 1066, Jackson, Miss., LB **$265,775**, SANITARY SEWER, MANHOLES, etc. various streets, JACKSON, MISS. City Council, City Hall, Jackson, Miss. Koeller & Reynolds, 411½ Tombigbee St., Jackson, Miss., consult. engrs. BA 12/6.

† **Southeast Div. Bureau Yards & Docks**, Bldg. No. 13, U. S. Naval Base, Charleston, S. C., rejected bids Nov. 14, SUPPLY WAREHOUSE ALTERATIONS, U. S. Naval Auxiliary Air Station, NBy-40795, Spec. 40795/61. SF, MERIDIAN, MISS. Will re-advertise. CD 10/16/61.

LOUISIANA—State Dpt. Hys., Rm. 426, Headquarters Admin. Bldg., Baton Rouge, BRIDGE,

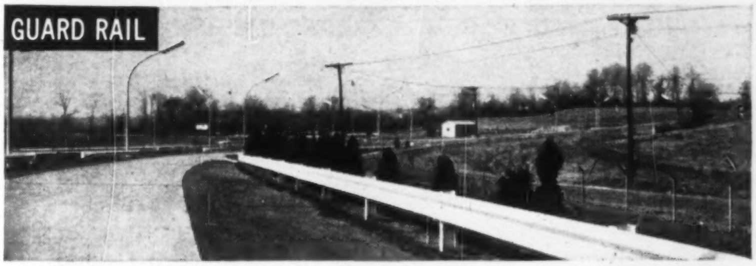
Howard Constr. Co. & E. J. Courtney, Box 415, Amite, La., CA **$534,092**, Amite River Bridge and approaches (Clinton-Greenburg Hy.), Rte. La 10. SP Nos. 61006-10 & 61007-17 FASP NO. S-587(1), East Feliciana and St. Helena Parishes. BA 9/27, CA 10/10. CD 10/3/61, under LB.

▲† **Williams-McWilliams Industries, Inc.**, 3308 Tulane Ave., Box 584, New Orleans 19, La., CA **$1,775,630**, EXCAVATION, Whiskey Bay Pilot, Atchafalaya River Main Channel, Iberville and St. Martin Parishes,



Pedestrian overpass, Palmetto Expressway, Miami, Florida.

STEEL CHAIN LINK FENCE
ANCHOR FENCE
BALTIMORE MARYLAND



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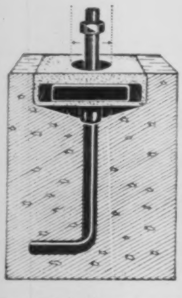

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CIVENG-16-047-62-50, LOUISIANA. U. S. Eng., foot of Prytania St., New Orleans, La. BA 11/15. CD 11/20/61, under LB.

Tennessee Gas Pipeline Co., Box 2511, Houston, Tex., Owner Builds, **$625,000**, 20.6 mi. 12 in. GAS GATHERING LINES, Morgan City Area, LOUISIANA. CD 10/27/61, under Louisiana, Mississippi and Tennessee.

E. H. Reeder Constr. Co., Inc., 2128 Hawes Ave., Dallas, Tex., LB **$527,289**, (9 bidders), Proj. CSD-S1, South INTERCEPTOR and OUTFALL SEWER; LB **$471,344**, (6 bidders), SEWERAGE PUMPING STATION S1 and SEWAGE PUMPING STATION S-2, Gardere Lane, BATON ROUGE, LA. City of Baton Rouge and East Baton Rouge Parish, Municipal Bldg., Baton Rouge, La.

Louisiana Paving Co., Inc., Box 122, Plaquemine, La., LB **$589,014**, (2 bidders), major STREET IMPRVTS, BOGALUSA, LA. City, City Hall, Bogalusa, La. BA 12/5. CD 11/6/61.

KENTUCKY—Commonwealth Ky., Dpt. Hys., Frankfort, Bids opened 12/8, BRIDGE,

Bates & Rogers Constr. Corp., 600 W. Jackson Blvd., Chicago, Ill., LB **$858,000**, (12 bidders), piers for twin bridges over Green River, West Kentucky Turnpike, WK 4-2, Muhlenberg Co. CD 11/22/61.

▲ **KENTUCKY**—Commonwealth Ky., Dpt. Hys., Frankfort, Bids opened 12/8, ROADS,

Ky.—**Greer Bros & Young, Inc.**, N. Main St., London, Ky., LB **$1,951,226**, (9 bidders), 8,087 mi. West Kentucky Turnpike, WK 7-1-1, WK 7-1-2, Grayson Co.;

Ky.—**Ralph Rogers & Co.**, S. Adams St., Bloomington, Ind., LB **$1,371,603**, (6 bidders), grade, surf. service roads 5.362 mi. West Kentucky Turnpike. WK 8-3, Hardin Co.;

Ky.—**The Allen Co.**, Box 112, Winchester, Ky., LB **$1,103,539**, (10 bidders), c. conc. pavt. 4.134 mi. East Kentucky Turnpike. EK 1-6 Clark Co.;

Ky.—**Desalvo Constr. Co.**, 3701 Red Bank, Cincinnati, O., LB **$1,606,600**, (11 bidders), c. conc. pavt. and incid. constr. 6.284 mi. East Kentucky Turnpike. EK 1-7, Clark Co.; LB **$1,306,400**, (10 bidders), c. conc. pavt. and incid. constr. 5.329 mi. East Kentucky Turnpike. EK 1-8, Clark and Powell Counties;

Ky.—**Wood & Bush**, 418 Ann St., Frankfort, Ky., LB **$1,177,565**, (1 bidder), grade, drain 1.864 mi. West Kentucky Turnpike. WK 1-2-1, Caldwell Co.;

Ky.—**Wasson Coal Mining Corp.**, Box 192, Booneville, Ind., LB **$1,977,329**, (9 bidders), combination grade, drain, 1.864 mi. and 4,433 mi. West Kentucky Turnpike. WK-1-2-1, Caldwell Co. and WK 1-2-1, WK 1-2-2, Caldwell Co. CD 11/22/61.

▲ **KENTUCKY**—Commonwealth Ky., Dpt. Hys., Frankfort, ROAD,

Wood & Bush Co., 418 Ann St., Frankfort, Ky., CA **$2,582,322**, combination 7.644 mi. West Kentucky Turnpike, Contrs. WK-6-2-1 and WK 6-2-2, Grayson Co. BA 11/21, CA 12/4. CD 11/27/61, under LB.

Jefferson Piping Co., 4633 Illinois, Louisville, Ky., LB **$282,894**, est. over $88,000, Proj. 302, MAIN SANITARY SEWER EXTENSION and LATERALS, Preston St., Hess Lane, LOUISVILLE, KY. Louisville & Jefferson Co. Metropolitan Sewer Dist., 412 W. Market St., Louisville 2, Ky. BA 12/6, CD 3/15/56.

† **Ferranti Electric, Inc.**, 95 Madison Ave., Hempstead, N. Y., CA **$214,310**, TRANSFORMER-SUBSTATION, Mt. Pleasant, TENNESSEE. Tennessee Valley Auth., New Sprankles Bldg., Knoxville, Tenn. CA 11/30/61.

BUILDINGS—LB & CA

▲ **J. Walker Caldwell, Inc.**, First Federal Bldg., Roanoke, Va., LB **$1,189,000**, (7 bidders), CONSOLIDATED HIGH SCHOOL, COVINGTON, VA. Alleghany County School Bd., Courthouse, Covington, Va. BA 11/28/61. CD 10/20/61.

M. L. Whitlow, 4825 Colubia Pike, Arlington, Va., CA **$921,000**, James Fennimore Cooper INTERMEDIATE SCHOOL, FAIRFAX, VA. Bd. Educ. Fairfax County, Fairfax, Va. BA 11/29/61. CD 12/4/61 under LB.

▲ **Sawyer Constr. Co.**, P.O. Box 179, Hampton, Va., CA **$502,800**, Phillips School ELEMENTARY SCHOOL NO. 5; CA **$502,800**, Tucker-Capps ELEMENTARY SCHOOL NO. 4, HAMPTON, VA. School Bd. of Hampton, City Hall, Hampton, Va. BA 12/5/61, CA 12/5/61. CD 12/12/61, under LB.

Buxbaum & Waranch, P.O. Box 12300, Norfolk, Va., Owner Builds, **$405,000**, thirty 1 and 2 story frame RESIDENCES, Carolanne Farms, LYNNHAVEN, VA.

Richmond County School Bd., Warsaw, Va., rejected bids Nov. 30, Consolidated HIGH SCHOOL, WARSAW, VA. Will re-advertise. CD 11/9/61.

McDonough Constr. Co. of Georgia, P.O. Box 1738, Atlanta, Ga., CA Est. **$400,000**, AGRICULTURE PHOTO LABORATORY, ASHEVILLE, N. C. Crescent City Leasing Corp., 1958 Monroe Dr., NE, Atlanta, Ga. General Services Admin., lessee. CD 12/5/61.

▲ **Fowler-Jones Constr. Co.**, 10-32nd St. N.W., Winston-Salem, N. C., CA **$5,000,000**, CLOVERLEAF SHOPPING CENTER, Interstate Rtes. 29 and 85, near CONCORD, N. C. Nybor Corp., c/o W. B. Leverton, 3547 N. Patterson Ave., Winston-Salem, N. C.

C. J. Kern Constr. Co., 601 N. Elm St., Greensboro, N. C., LB Est. **$450,000**, NURSES DORMITORY, NURSES SCHOOL, GREENSBORO, N. C. Wesley Long Community Hospital, 338 N. Elm St., Greensboro, N. C. BA 12/5/61. CD 11/15/61.

N. C. Monroe Constr. Co., P.O. Box 359, Greensboro, N. C., LB Est. **$650,000**, general contract 130,000 sq. ft. WAREHOUSE LABORATORY, OFFICE, HIGH POINT, N. C. Alderman Studios, Inc., 320 N. Hamilton St., High Point, N. C. BA 11/28/61. CD 11/3/61.

▲ **Maxwell Realty Co.**, 1144 Brevard Court, Charlotte, N. C., Owner Builds, **$1,100,000**, 75 RESIDENCES, Country Club Estates Subdivision, WHITEVILLE, N. C.

T. A. Loving & Co., Wachovia Bank Bldg., Goldsboro, N. C., CA Est. **$750,000**, TOBACCO REDRYING PLANT ADDN., WILSON, N. C. Imperial Tobacco Co.,

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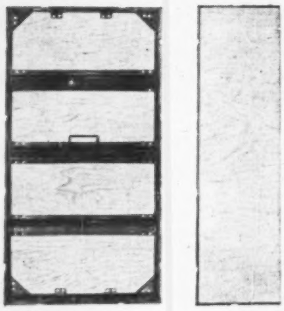

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Ltd. of Great Britain, 422 E. Main St., Richmond, Va. E. Tucker Carlton, 206 E. Cary St, Richmond, Va., archt.

J. G. Messick & Sons, 126 Brooktown Ave., Winston-Salem, N. C., Owner Builds, **$500,000,** SHOPPING CENTER, N. C. Hy. 67, WINSTON-SALEM, N. C. William R. Wallace, 1202 Reynolds Bldg., Winston-Salem, N. C., archt.

▲ **Botany Bay, Inc.,** c/o H. F. McDowell, Highway 700, Wadmalaw Island, Charleston, S. C., Owner Builds, **$2,000,000,** MOTOR HOTEL, MARINA, RESTAURANT, CHARLESTON, S. C. Wm. Fischer, 446 N. Newport Blvd., Newport Beach, Calif., archt.

▲ **Construction Service Co., Inc.,** P.O. Drawer F, Isle of Palms, Charleston, S. C., LB **$3,156,151,** HOSPITAL ADDN., ALTERATIONS, CHARLESTON, S. C. Roper Hospital, 310 Calhoun St., Charleston, S. C. BA 12/5/61. CD 11/28/61.

C. W. Blanchard, Box 748-A, Exchange St., Charleston, S. C., CA **$448,613,** Ashley River ELEMENTARY SCHOOL, NORTH CHARLESTON, S. C. School Dist. 4, P.O. Box 5285, North Charleston, S. C. BA 12/5/61. CD 11/10/61.

Cecil's Inc., P.O. Box 1945, Spartanburg, S. C., CA Est. **$750,000,** 126,000 sq. ft. MFG. PLANT ADDN., SPARTANBURG, S. C. Jonathan Logan, Inc., c/o contractor. David W. Cecil, 180 N. Dean St., Spartanburg, S. C., archt. CD 12/6/61.

▲ **Deco Leasing Corp.,** 515 Plaster Ave. NE, Atlanta, Ga., Owner Builds, **$3,000,000,** 10 story, 162,000 sq. ft. OFFICE BLDG., corner Pryor and Decatur Sts. SW, ATLANTA, GA. I. E. Saporta, 890 W. Peachtree St. NW, Atlanta, Ga., archt.

▲ **Rust Engineering Co.,** 2316 4th Ave. N., Birmingham, Ala., CA **$1,200,000,** foundation and slip form for cement PLANT, ATLANTA, GA. Southern Cement Co., Division American Marietta Co., Protective Life Bldg., Birmingham, Ala. BA 11/1/61. CD 11/1/61, under Ga., Bolton.

Remtack, Inc., 2108 18th Ave., Columbus, Ga., Owner Builds, **$500,000,** 50 RESIDENCES, Battleforest Subdivision, COLUMBUS, GA.

Callaway Realty Co., 2706 Jonesboro Rd., Atlanta, Ga., Owner Builds, **$500,000,** 45 RESIDENCES, FOREST PARK, GA.

Whalley Constr. Co., 4115 Montgomery St., Savannah, Ga., CA **$732,000,** SCHOOLS ADDNS., 6 PHYSICAL EDUCATIONAL-MUSIC BLDGS., SAVANNAH, GA. Chatham Co. Bd. Educ., 208 Bull St., Savannah, Ga. CD 3/29/61.

Samaritan Convalescent & Nursing Home, 315 N. Federal Hy., Hollywood, Fla., Owner Builds, **$750,000,** NURSING HOME, HOLLYWOOD, FLA. Martin N. Wohl, 310 N. 20th Ave., Hollywood, Fla., archt.

Beers Constr. Co., P.O. Box 1055, Tallahassee, Fla., CA **$711,532,** COURTHOUSE, MARIANNA, FLA. Bd. Comrs. Jackson Co., Courthouse, Marianna, Fla. BA 11/28/61. CD 12/6/61, under LB.

Edward J. DeBartolo Co., 7620 Market St., Youngstown, O., Owner Builds, **$500,000,** SHOPPING CENTER, MELBOURNE, FLA.

F & R Homes Building Corp., 9301 SW 56th St., Miami, Fla., Owner Builds, Approx. **$400,000,** 39 HOMES, 3800 SW 121st Ave. and 12000 SW 40th St., MIAMI, FLA. R. J. Schneider, 1431 Flamingo Way, Hialeah, Fla., and Milton C. Harry, 7233 SW 57th Court, Miami, Fla., archts.

Southern Beverages, Inc., 3601 NW 55th St., Miami, Fla., rejected bids BOTTLING PLANT, MIAMI, FLA. Oboler & Clarks, Inc., 925 Arthur Godfrey Rd., Miami Beach, Fla., engr. LB **$306,000.** CD 12/6/61, under LB.

Allen & Genne, 1660 Getwell St., Memphis, Tenn., CA **$698,599,** MOTOR HOTEL, ORLANDO, FLA. Nationwide Downtowner Motor Inns, Inc., Dupont Bldg., Memphis, Tenn. BA 11/20/61. CD 11/29/61, under LB.

▲ **Settecasi & Chillura,** 2101 5th Ave., Tampa, Fla., LB **$1,320,480,** (5 bidders), McIntosh Road JUNIOR HIGH SCHOOL, SARASOTA, FLA. Sarasota County Bd. Pub. Instruction, County Courthouse, Sarasota, Fla. BA 11/28/61.

▲ **Plantation Manors, Inc.,** 9900 NW 7th Ave., Miami, Fla., Owner Builds, **$1,950,000,** 3-4 story 150 units Park Lake APARTMENTS, Maitland Ave., WINTER PARK, FLA. CD 8/9/61.

Reynolds Constr. Co., P.O. Box 9141, Tuscaloosa, Ala., CA **$925,950,** 100 low rent HOUSING UNITS, NORTHPORT, ALA. Northport Housing Auth., 302 Main Ave., Northport, Ala. BA 11/28/61. CD 12/6/61, under LB.

▲ **Broadwater Beach Constr. Co.,** Biloxi, Miss., CA **$1,000,000,** 102 unit HOTEL ADDN., BILOXI, MISS. Broadwater Beach Hotel, W. Beach Blvd., Biloxi, Miss.

McDaniel Bros. Constr. Co., P.O. Box 805, Clarksdale, Miss., CA **$408,890,** 1 story, 100,000 sq. ft. PIANO MANUFACTURING PLANT ADDN. No. 2, GREENWOOD, MISS. Baldwin Piano Co., Greenwood, Miss. BA 12/4, CA 12/4. CD 11/13/61.

† **Rostetter Constr. Co.,** 4402 Shelbyville Rd., Louisville 7, Ky., CA **$719,500,** JUNIOR HIGH SCHOOL, Proj. Ky-62-C-FED-2-A-12, FORT KNOX, KY. Housing & Finance Agency, Hoffman Bldg., Louisville 2, Ky. BA 12/5. CD 12/8/61, under LB.

Azure Development Corp., c/o Sweet & Judd, archts., 510 Republic Bldg., Louisville 2, Ky., rejected bids Nov. 14, 64 unit APARTMENT, FRANKFORT, KY. **$500,000.** CD 11/7/61.

H. A. Lott, Inc., Contr., Deposit Guarantee Bank Bldg., Jackson, Miss., LB **$664,128,** est. $460,000, women's

(Continued on page 170)

THE CLIENT IS PLEASED

CHASE BRASS & COPPER

Chase Brass & Copper Co.
Long Island Warehouse
Arch./Engr.—Lockwood-Greene Engrs., Inc.
Contr.—Gilbane Building Co.

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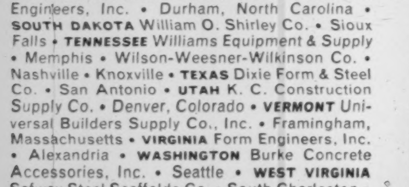

1 **"Construction time was cut 50%** on each floor by shoring with Rex-Spanall," stated William Keipert, superintendent. This view shows how—with one man guiding the Spanall 1015 units into place on the ledgers. Spanall 610 units were also used for shorter spans. The lightweight, easily handled Spanall shores reduced shoring manpower needs in half. Spanall telescopic design and rapid one-bolt locking permitted fast, accurate settings of the 15′ spans shown here.

2 **Spanall cleared the way below** for immediate work by electricians, plumbers and pipefitters, while slab pouring went on above. No jungle of vertical shores, no hindrance the modern Spanall way. Also, stripping time was greatly reduced. "Since Spanall required no nailing, we saved valuable time that would have been consumed clawing out nails in the older method," reported Mr. Keipert.

3 **Another floor ready** for decking and pouring in record time. Spanall mechanized shoring methods, saving the setting up of elaborate shoring systems on each of the 16 floors as "coded" ledgers were lifted intact from floor to floor. "The speed obtained with Spanall," said the superintendent, "permitted us to pour a floor each second day." In addition, the versatility of Spanall with infinite size adjustability enabled this contractor to use the same members for a variety of span widths.

construction idea

How high-rise building goes up a floor every second day using Rex-Spanall Shoring...and costs are cut in half!

Rising with incredible speed on Chicago's lake front is this striking new high-rise apartment building—a tribute to *new* construction ideas and methods.

Contractor Mid-Continent Construction Co., Inc., *applied for the first time in Chicago construction the* central core and cantilevered slab principle. In just ten days the main tower, which is the central support, was erected. Then Rex-Spanall adjustable steel shores took over for the shoring of 77′ by 87′ slabs—with the impressive results reported above:

◀ The 5740 Sheridan Building, Chicago. *Contractor:* Mid-Continent Construction Co., Inc., Chicago.

The slabs are connected to the 18 peripheral columns, whose chief function is for architectural effect. Note small crew size on floor being shored by Spanall and the "clean" simplicity of the job.

REX-SPANALL

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for bridges

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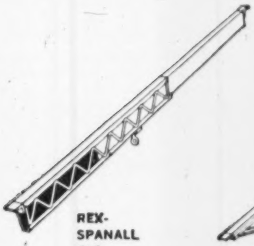

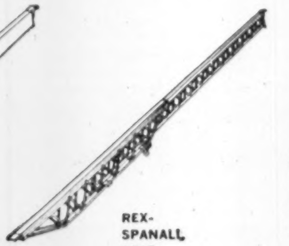

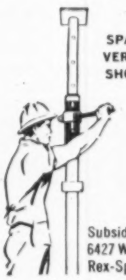

Subsidiary of CHAIN Belt Company, Rex-Spanall, Inc.,
6427 West Capitol Drive, Milwaukee 16, Wisconsin. Export:
Rex-Spanall International, S.A., Hato Rey, Puerto Rico

CIRCLE 169 ON READER SERVICE CARD

(Continued from page 167)

DORMITORY, Jackson State College, JACKSON, MISS. State Bldg. Comn., State Office Bldg., Jackson, Miss. BA 12/6. CD 11/17/61.

▲ **H. A. Lott, Inc.,** Box 25005, Houston, Tex., CA **$1,120,720,** 1 story, 65,000 sq. ft. structural steel COUNTRY CLUB, JACKSON, MISS. Jackson Country Club, P.O. Box 995, Jackson, Miss. BA 11/21. CD 11/27/61, under LB.

T. U. Parks Co., 711 E. Main St., Chattanooga, Tenn., and **Cecil Davis,** 213 Washington Rd., Rossville, Ga., CA Est. **$300,000,** CARPET MFG. PLANT, CHATTANOOGA, TENN. E'Con Carpet Mills, 201 W. 13th St., Chattanooga, Tenn.

Hugh G. Scudder Constr. Co., P.O. Box 321, Union City, Tenn., LB **$593,299,** Peachaven ELEMENTARY SCHOOL, CLARKSVILLE, TENN. City Bd. Educ., City Hall, Clarksville, Tenn. BA 12/5/61. CD 11/24/61.

Tasco Constr. Co., 1018 Third National Bank Bldg., Nashville, Tenn., CA Est. over **$300,000,** 91,000 sq. ft. WAREHOUSE, CLARKSVILLE, TENN. Acme Boot Co., Inc., Grossland St., Clarksville, Tenn.

Kidd & Evans, P.O. Box 87, Clinton, Tenn., CA **$505,000,** 50 low rent HOUSING UNITS, LAKE CITY, TENN. La Follette Housing Auth., P.O. Box 391, La Follette, Tenn. BA 11/28/61. CD 12/6/61, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **Ill., Chicago**—BA 12/27—Dpt. Purchases, City Hall, Zone 2, 6 span elevated HIGHWAY STRUCTURE, South Rte. Expressway, Proj. S 2525.3-2H, $1,785,000. CD 2/19/60.

Mich., Mount Clemens — BA 12/27 — Macomb County Drain Comn., 115 Groesbeck Hy., Sect. A, 3,492 lin. ft. 15 and 72 in. concrete PIPE DRAINS, 100 sq. yd. concrete rip-rap, manholes, catch basins, Sections 1-11-12-14, plans deposit $25; Sect. B, 2,628 lin. ft. 54- to 60-in. concrete PIPE DRAINS, manholes, etc., Sections 1-11-12-14; Sect. C, 592 lin. ft. 18- to 36-in. concrete PIPE DRAINS, manholes, etc., Sections 1-11-12-14; Sect. D, 1,340 lin. ft. 24- to 42-in. concrete PIPE DRAINS, manholes, etc., Sections 1-11-12-14; Sect. E, 3,099 lin. ft. 24- to 48-in. concrete PIPE DRAINS, manholes, etc., Sections 1-11-12-14.

† **Wis., LaCrosse**—BA 12/28—Bureau of Sport Fisheries & Wildlife, Dpt. Interior, 1006 West Lake St., Minneapolis 8, Minn., DEVELOP EXISTING WELL, FURNISH, INSTALL SUPPLY LINE, PUMPING EQUIPMENT, at Fish Control Laboratory.

Ind., Indianapolis—BA 1/4—Bd. Comrs. Marion Co., Courthouse, oil pavement, DITCH RD. IMPRVS. between 73rd and 86th Sts. Plans deposit $15. Fraps, Thompson & Unversaw, Inc., 3763 Broadway, engr. CD 1/14/59.

Mich., Kalamazoo—BA 1/5—City, City Hall, 211 W. South St., RELIEF SEWER, Westnedge Ave. from Academy to Ransom Sts.; Westwood TRUNK SEWER from Stadium Dr. to W. Main St. and Drake Rd.; OUTLET SEWER starting at New York Central R.R. just north Kilgore Rd. to Westnedge Ave. and SEWERS at Whites Lake to north section Lakeside Dr.; section off Stevens Ave. and all of Ruthin Dr., $600,000. Donald Swets, city engr. CD 6/2/61.

† **Wis., Milwaukee** — BA 1/10 — Procurement Section, Room A-1, 4747 Troost Ave., Kansas City, Zone 10, Mo., constr. 24 x 64 ft. conc. block BLDG. and TRANSFORMER PAD; erect struc. steel RADAR TOWER; install AIR-CONDITIONER, ELEC. WORK, grade and surf. access road and plot area; constr. UNDERGROUND DUCT SYSTEM, HEATING SYSTEM, connect electrical power source to substation, install power and control cables; remove and install incidentals in radar equipment room; install engine generator and metalclad substation, General Mitchell Field, CE62-60.

† **O., Bellefontaine**—BA 1/11—U. S. Eng., Box 59, Louisville 1, Ky., RADAR TOWER, FPS 27, Bellefontaine Air Force Station, ENG-15-029-62-15, $400,000. Plans-deposit $10. CD 8/29/61.

Wis., Manitowoc—BA 1/24—City of Manitowoc, City Hall, 51,064 ft. 8- to 30-in. SEWERS, LIFT STATION, FORCE MAIN, Proj. I, II and III. Plans deposit $25. Fenner-Brey Eng. Co., 429 North 9 St., engr. CD 6/16/61.

BUILDINGS—BA

Wis., Prairie du Chien — BA 1/4 — Joint School Dist. No. 1, 424 South Minnesota St., HIGH SCHOOL. Plans deposit $50. Extended date. John J. Flad & Assocs., 2525 University Ave., Madison 5, Wis., archts. CD 11/29/61.

Wis., Madison — BA 1/30 — Wisconsin University Bldg. Corp., Madison, SOUTHEAST DORMITORY No. 1. Plans deposit $75. J & G Daverman Co., 924 Grandville Ave. S.E., Grand Rapids, Mich., archt.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Dpt. Hys., State Depts. Bldg., Columbus, Zone 15, ROADS,

O.—**The Lane Constr. Corp.,** 965 E. Main St., Meriden, Conn., CA **$7,129,338,** Type T 71 and structures, 10.33 mi. SR 8, Sections 14.00, 0.00, I 77-4(12) 105, Plain Jackson and Green Twps., Proj. 727, Stark and Summit Counties;

O.—**V. N. Holderman & Sons Co.,** 6155 Huntley Rd., Columbus 24, O., CA **$4,573,485,** Type T 71 and structures 9.102 mi. USR 52, Sections 0.00, 34.56, F 393(14), Hamilton and Greene Twps. Proj. 723, Lawrence and Scioto Counties;

O.—**S. J. Groves & Sons Co.,** 500 Wesley Temple Bldg., Minneapolis 3, Minn., CA **$2,623,963,** Type T 34 on B 20 and structures 2.732 mi. SR 7, Sections (31.39-32.53) F-FG 431(15), Village of Stratton and in Saline Twp. Proj. 722, Jefferson Co.;

O.—**Don S. Cisle, Contractor, Inc.,** First National Bank Bldg., Hamilton, O., CA **$735,912,** Type T 35, 9.959 mi. SR 28, Sections (4.79) (9.99) 0.00, F 383(11), Miami, Goshen and Harlan Twps., Proj. 719, Clermont and Warren Counties;

O.—**C. A. Agresta Constr. Co.,** 4186 Greenvale Rd., Cleveland 21, O., CA **$752,980,** Type T 71 and structure 2.359 mi. SR 2, Section 20.53, I 90-1 (27)8, Cuyahoga Co. Proj. 720. Grand total $15,815,678. BA 11/28/61. CD 12/1/61, under LB.

▲† **American Dredging Co.,** 12 S. 12th St., Phila., Pa., LB **$1,494,955** (6 bidders), DREDGING Cleveland Harbor and Cuyahoga River, OHIO. U. S. Eng., foot of Bridge St., Buffalo 7, N. Y. BA 12/6/61. CD 11/29/61.

Wirt & Starn, Inc., 736 W. Liberty Sts., Wooster, O., CA **$220,200,** 7 mi. GAS PIPE LINE, Columbiana Co., Wellsville, OHIO. Ohio Fuel Gas Co., 109 N. Front St., Columbus, O. CD 1/18/57.

Don Miller, Inc., Green Springs, O., CA **$104,200,** 1.7 mi. 3- to 12-in. GAS PIPE LINE for NATURAL GAS LINES, nine different sectional lines, Wood Co., Bowling Green (OHIO).

▲ **Lamm Constr. Co., Inc.,** 777 S. County Line Dr., Litchfield, Mich., CA **$1,010,696,** 33 mi. SEWERS to serve Macedonia, Northfield Center and Sagamore Hills, AKRON, O. Bd. Comrs., Summit Co., Courthouse, Akron, O. BA 11/14/61. CA 12/3/61. CD 11/14/61.

Charles Shutrump & Sons, 101 W. Hylda St., Youngstown, O., CA **$712,156,** Crab Creek INTERCEPTOR SEWER, YOUNGSTOWN, O. City, City Hall, Youngstown, O. BA 10/24/61. CD 11/1/61, under LB.

▲ **Carl M. Geupel Constr. Co.,** 1919 N. Meridian St., Indianapolis, Ind., and **A. T. Gravelie,** 3815 Massachusetts Ave., Indianapolis, Ind., CA **$1,535,343,** CHANNEL WIDENING, LEVEE WORK, Eagle Creek, south of INDIANAPOLIS, IND. Indianapolis Flood Control Bd., 202 N. Alabama St., Indianapolis, Ind. BA 11/17/61. CA 12/1/61. CD 12/11/61, under LB.

▲ **Inland Constr. Co.,** 6132 Oakton St., Morton Grove, Ill., CA **$9,100,000,** ten DRIVE-IN THEATRES, four IN-DOOR THEATRES, Chicago and vicinity, ILLINOIS. Stan Kohlberg, 6401 95th St., Oaklawn, Ill. CA About 11/15/61.

Seneca Petroleum Co., Inc., 439 W. 33rd St., Chicago 16, Ill., LB **$245,828,** est. $200,000, 5.62 mi. BIT. STREET PAVING, CONCRETE CURB, GUTTERS, Proj. 57-cs, BERWYN, ILL. City, City Hall, Berwyn, Ill. BA 11/14/61.

▲ **Robert R. Anderson & Co.,** 4550 W. Palmer St., Chicago, Ill., LB **$2,925,209,** est. $2,600,000, GRADING, PAVING, DRAINAGE, LIGHTING, LANDSCAPE

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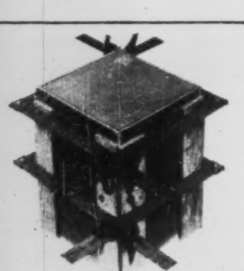

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602 WEST McCARTY STREET • INDIANAPOLIS 6, INDIANA

South Route Expressway, Pershing to 35th Sts., Proj S 2323, 6-2P, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. BA 11/28/61. CD 11/9/61.

▲ **William E. Schweitzer Co.**, 2207 Dodge St., Evanston Ill., LB **$6,987,080,** (5 bidders), GRADING, PAVING, LANDSCAPING, DRAINAGE, South Rte. Expressway, 35th St. to 28th Pl., Proj. 80-68-61-33, CHICAGO ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. BA 12/8/61. CD 11/22/61.

Hodge C. Johnstone Sewer Contractor, 704 E. Emerson St., Bloomington, Ill., CA **$307,788,** SEWERAGE SYSTEM IMPRVS., incl. sewage treatment plant, oxidation lagoon type 45,350 lin ft. sewers, DELAVAN, ILL. City, City Hall, Delavan, Ill. Casler & Stapleton, 202 S. Church St., Jacksonville, Ill., engrs. CD 9/22/61.

Bob Propheter Co., Sterling, Ill., LB **$239,277**, est. $393,000, gravel or crushed stone ROAD PAVING, SEWERS, CURB, GUTTERS, Proj. 12-cs, MORRISON, ILL. City, City Hall, Morrison, Ill. BA 11/16/61. CD 11/9/61.

WISCONSIN—State Hy. Comn. at the office of its Constr. Section, Room 535, State Office Bldg., Madison, ROADS,

H. F. Radandt, Inc., 3110 Locust Lane, Eau Claire, Wis., CA **$502,875**, grade, subbase 7.327 mi. S.T.H. 29, Chippewa Falls-Boyd Rd., Proj. F 020-1(26), Contr. 1, Chippewa Co. BA 11/14/61, CA 12/6/61. CD 11/17/61, under LB.

▲ **Santucci Constr. Co.**, 5115 Church St., Skokie, Ill., CA **$2,628,076,** Proj. 187, SEWER, S. Pennsylvania Ave. from north of E. Rawson Ave. to E. College Ave., Oak Creek, MILWAUKEE, WIS. Metropolitan Sewerage Comn. of the County of Milwaukee, P.O. Box 2079, Milwaukee 1, Wis. BA 11/28/61. CA 12/4/61. CD 12/1/61, under LB.

W. J. Lazynski, Inc., 4445 N. 124 St., Milwaukee, Wis., CA **$1,049,704,** Proj. 188, SEWER S. Pennsylvania Ave. from E. Puetz Rd. to 1,146 ft. north of Ryan Rd. (Milwaukee, Wis.).

MICHIGAN and ONTARIO—International Bridge Auth. at City Sault Ste. Marie, City Hall, Sault Ste. Marie, Mich., BRIDGE,

Johnson-Greene Co., 416 E. Huron St. Ann Arbor, Mich., CA **$663,229,** Contr. 8, concrete deck, railings, drainage and electric work for American River spans of Sault Ste. Marie International Bridge. BA 10/26. CD 11/2/61, under LB.

▲ **MICHIGAN**—State Hy. Dpt., Civic Center, Lansing, Bids opened 12/6, ROADS,

Mich.—**Canonie Constr. Co.**, South Haven, Mich., LB **$4,313,058**; 7.8 mi. I-75 freeway from M-123 present terminus of existing freeway north of St. Ignace, north to M-134 incl. interchanges at M-123 and M-134, grade sep. at Moran Rd. and twin bridges at Carp River, Mackinac Co.

Mich.—**L. W. Edison Constr. Co.**, 3134 Midland Dr. S.E., Grand Rapids, Mich., LB **$3,024,803**, 7 mi. I-75 freeway from M-134 north to FAS Rte. 1052 about 1 mi. south of Mackinac-Chippewa County line, incl. twin bridge to carry freeway over Pine River about 21 mi. north of St. Ignace, Mackinac Co.;

Mich.—**Thornton Constr. Co.**, 1028 Ethel Ave., Hancock, Mich., LB **$159,648,** 13 mi. paving on M-65 between Curran and Spratt in Alcona and Alpena Counties; LB **$122,736**, 14.3 mi. paving US 27 from Poquette Rd. at Gaylord south to Otsego-Crawford County line, Otsego Co.; LB **$190,154,** 13.9 mi. paving M-65 from Lachine in Alpena Co. north to Posen, Presque Isle Co., Alpena and Presque Isle Counties;

Mich.—**Globe Constr. Co.**, 312 Peck Bldg., Kalamazoo, Mich., LB **$91,409**, 3.6 mi. paving on M-96 between Augusta and Battle Creek, Calhoun and Kalamazoo Counties.

Mich.—**Detroit Asphalt Paving Co.**, 12201 Beech-Daly Rd., Detroit, Mich., LB **$102,967**, 6.1 mi. paving on US 16 from Brighton to Lake Chemung, Livingston Co. CD 11/24/61.

▲ **MICHIGAN**—State Hy. Dpt., Civic Center, Lansing, ROADS,

Mich.—**Smith Bros. Excavating, Inc.**, Cassopolis, Mich., CA **$2,248,734**, 9 in. concrete pavt. 6.108 mi. and 12 bridge structures US-131 (Reloc.) from existing US-131 northerly to "O" Ave., Proj. 7, Kalamazoo Co.;

Mich.—**Charles J. Rogers, Inc.**, 14836 Grand River Ave., Detroit 27, Mich., **Cooke Contracting Co.**, 1116 Penobscot Bldg., Detroit 26, Mich., and **Jutton-Kelly Co.**, 13240 Albert Ave., Dearborn, Mich., CA **$1,492,072**, 0.4 mi. alterations to Edsel Ford Expressway, 3 interchange bridge structures and partial constr. of two other interchange bridges on I-75 at Interchange with Chrysler Expressway in City of Detroit, Proj. I-75-1(43)53, Wayne Co.;

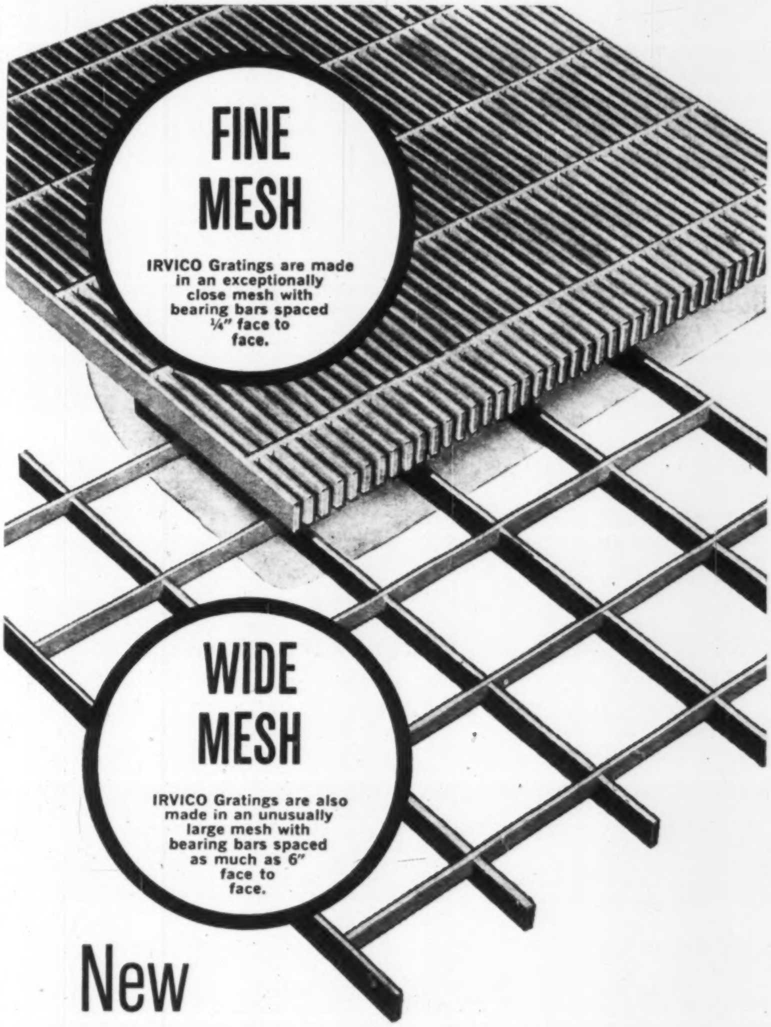
Mich.—**Charles J. Rogers, Inc.**, 14836 Grand River Ave., Detroit 27, Mich., and **Cooke Contracting Co.**, 1116 Penobscot Bldg., Detroit 26, Mich., CA **$555,982**, grading, concrete surf., water mains and sewer alterations 2.203 mi. northeast service road of Northwestern Hy. from Lee Baker Rd. to Lahser Rd. in City of Southfield, Oakland Co. CD 11/27/61, under LB;

Mich.—**L. A. Davidson**, 213 East St. Joseph, Lansing, Mich., CA **$3,643,021,** 3 mi. freeway, incl. 1.2 mi. 6-lane Interstate 75 and 1.8 mi. 4-lane connecting I-75 with Telegraph Rd. southwest of Detroit, Wayne Co. CD 11/24/61, under LB;

Mich.—**Louis Garavaglia**, 24240 Mount Rd., Warren, Mich., CA **$3,564,375**, 1.4 mi. 6-lane John Lodge Freeway Extension from Meyers Rd. to 7 Mile Rd., Wayne Co. BA 11/21, CA 12/8. CD 11/24/61, under LB. Grand total $11,504,184.

Frank J. Siller, 1447 Granada St., Ann Arbor, Mich., CA **$466,952**, (7 bidders), 33,300 lin. ft. 12 and 16 in. c.i. WATER MAINS and WATER PUMPING STATION, YPSILANTI, MICH. Twp. Ypsilanti, 1165 Ecorse Rd., Ypsilanti, Mich. BA 12/1. CD 11/3/61.

S. Sweissman Excav. Co., Inc., 15496 Telegraph Rd., Detroit 39, Mich., CA **$569,990**, Proj. WS-111-B,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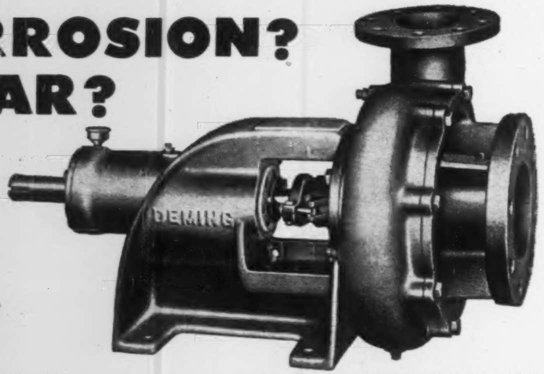

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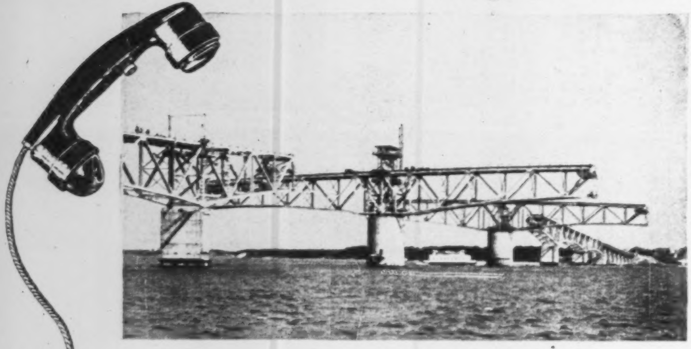

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6,245 lin. ft. 66 in. WATER MAINS, Middlepointe, Haggerty, Jonathan, Hemlock Aves., Besser to Calhoun, Dearborn, DETROIT, MICH. Dpt. Water Supply, Rm. 506, 735 Randolph St., Detroit 26, Mich. BA 11/22. CD 12/6/61, under LB.

BUILDINGS—LB & CA

▲ **Martini Constr. Co.,** 13828 Industrial Parkway, Cleveland, O., CA **$1,338,000** (7 bidders), MEN'S DORMITORY and DINING HALL, CH OHIO-128-D, BEREA, O. Baldwin Wallace College, Berea, O. BA 12/4/61. CA 12/4/61. CD 12/4/61, under LB.

▲ **Robert F. Keough**, 5358 Harris Rd., Brecksville, O., Owner Builds, **$1,900,000**, $900,000 first year (2 year program), 48 HOMES, Harris Rd., Cran Ridge Dr. and Canterbury Lane, Cranberry Ridge, BROADVIEW HEIGHTS, (Br. Cleveland) O. John H. Von Gunten, 4185 Lee Rd., Cleveland, O., archt.

John Hemmer Constr. Co., Inc., 1020 Prospect St., Cincinnati, O., CA **$684,340**, KETTERING LABORATORY ADDN., CINCINNATI, O. University of Cincinnati, Burnet Woods Park, Cincinnati, O. BA 11/14/61, CA 12/7/61. CD 11/27/61, under LB.

▲ **Johnson & Hardin Co.,** 700 Main St., Cincinnati, O., cancelled bids to have been opened Dec. 1, 1 story PRINTING PLANT, Red Bank Rd., CINCINNATI, O. **$1,000,000.** Woodie Garber & Assocs., 104 William Howard Taft Rd., Cincinnati, O., archts. Will readvertise. CD 11/3/61.

J & C Building Co., Inc., 2038 Laurelhill Rd., Cleveland 21, O., Owner Builds, **$560,000,** 21 ranch and split-level HOMES, Trevor Lane, CLEVELAND, O.

R. S. Ursprung Co., Hanna Bldg., Cleveland 15, O., CA **$619,600,** (6 bidders), general contract, HIGH SCHOOL ADDN., Cuyahoga Heights, CLEVELAND, O. Cuyahoga Heights Br. Educ., 4820 E. 71st St., Cleveland 25, O. BA 12/5/61. CD 11/9/61.

▲ **Mosser Constr. Co.,** 122 S. Wilson Ave., Fremont, O., CA **$1,999,900,** general contract HIGH SCHOOL, FINDLAY, O. Bd. Educ., 1001 Blanchard Ave., Findlay, O. Perkins & Will, 309 W. Jackson Blvd., Chicago, Ill., archts. BA 1130/61. CA 12/4/61. CD 11/2/61.

Terry P. Smith, Inc., Plumbing & Heating Co., 608 W. High St., Lima, O., CA **$422,866** (6 bidders), mechanical contract, HIGH SCHOOL (Findlay, O.).

▲ **Knowlton Constr. Co.,** 1133 W. Columbus St., Bellefontaine, O., CA **$1,819,922,** South HIGH SCHOOL, MANSFIELD, O. Bd. Educ., 75 Carpenter Rd., Mansfield, O. BA 11/1/61. CD 11/8/61, under LB.

▲ **Beth-Kimberly Corp.,** Ravenna, O., Owner Builds, **$1,600,000,** 174 HOMES, Village Green Subdivision 2, north of Eastwood Ave., TALLMADGE, O.

H J. Spieker Co., 1401 Elm St., Toledo, O., LB **$908,000**, est. $1,605,324, (6 bidders), general contract, 2 story, GLENWOOD GRADE SCHOOL, along Collins St. between Glenwood and Robinwood, TOLEDO, O. Bd. Educ., Manhattan and Elm Sts., Toledo, O. BA 12/7/61. CD 11/13/61.

Weaver Constr. Co., Bryan, O., CA general contract 2 story Indiana limestone LIBRARY corner S. Darling and W. Park Sts., ANGOLA, IND. Trustees, Tri-State College, Angola, Ind., Monical & Wolverton, Inc., 1718 W. 15th St., Indianapolis, Ind., archts. Total est. **$410,000,** CA 11/29/61;
William P. McDonald Co., 1707 S. Harrison St., Fort Wayne, Ind., CA, heating plumbing and vent. contracts, 2 story LIBRARY (Angola, Ind.);
McKay Electrical Co., 3501 Quimby St., Fort Wayne, Ind., CA electric contract, LIBRARY (Angola, Ind.)

▲ **Geupel Constr. Co.,** 1919 N. Meridian St., Indianapolis, Ind., LB **$2,774,500,** general contract HIGH SCHOOL, 34th and Moeller Rd., INDIANAPOLIS, IND. Bd. School Comrs., 150 N. Meridian St., Indianapolis, Ind., BA 11/28/61, CD 11/2/61;
Robbins Electric Co., 622 E. Market St., Indianapolis, Ind., LB **$433,000,** electric contract, HIGH SCHOOL, (Indianapolis, Ind.);
Cook Bros., Inc., 233 Virginia Ave., Indianapolis, Ind., LB **$927,000**, mechanical contract HIGH SCHOOL (Indianapolis, Ind.).

J. C. Ripberger Constr. Corp., 2217 Bethel St., Indianapolis, Ind., LB **$427,840,** general contract SCHOOL NO. 83, 42nd and Emerson Sts., INDIANAPOLIS, IND. Indianapolis School Bd., 150 N. Meridian St., Indianapolis, Ind.

Seth E. Giem, P.O. Box 953, Paducah, Ky., CA $707,790, JUNIOR HIGH SCHOOL, MARTINSVILLE, IND. Metropolitan School Dist. of Martinsville, Martinsville, Ind. BA 11/14/61. CD 11/22/61, under LB.

H. B. Barnard Co., 38 S. Dearborn St., Chicago, Ill., CA $700,000, APARTMENT, CHICAGO, ILL., 6236 N. Winthrop Corp., 6236 N. Winthrop Ave., Chicago, Ill.

Fred Berglund & Son, Inc., 8410 S. Chicago Ave., Chicago, Ill., CA **$500,000,** 1 story, 13,000 sq. ft. HOSPITAL ADDN., CHICAGO, ILL. Jackson Park Hospital, 7531 S. Stony Island Ave., Chicago, Ill. A. Epstein & Son, Inc., 2011 W. Pershing Rd., Chicago, Ill., archt.

H. F. Campbell Constr. Co., 9301 Michigan St., Detroit, Mich., CA $300,000, WAREHOUSE, OFFICE, CHICAGO, ILL. Anheuser-Busch Co., 2367 Logan Blvd., Chicago, Ill. CA 12/1/61.

▲ **Sherwin Radis,** 6017 N. California Ave., Chicago, Ill., CA **$1,200,000,** 17 story, rein.-con. frame APARTMENT, 1330 N. Dearborn St., CHICAGO, ILL. Owner, c/o contractor. Seymour Goldstein & Assocs., 22 E. Elm St., Chicago, Ill., archts.

▲ **Supreme Builders,** 7719 Clarendon Hills Rd., Claredon Hills, Ill., CA **$1,050,000,** 69,000 sq. ft. REAVES HIGH SCHOOL ADDN., Stickney, OAKLAWN, ILL. High School Dist. 220, 77th St. and Austin Ave., Oaklawn, Ill. Novak & Assocs., 6725 W. Stanley Ave., Berwyn, Ill., archts.

K Sullivan, 25 North Orchard St., Madison, Wis., LB **$578,610,** general contarct Unit 1A, GYMNASIUM, MADISON, WIS. University of Wisconsin Bldg. Corp., Madison, Wis. BA 12/1/61. CD 11/8/61.

F. W. Fordon Constr. Co., 7360 W. Chicago Blvd., Detroit 4, Mich., CA **$729,300,** general contract JUNIOR HIGH SCHOOL ADDN., 26300 Arsenal Ave., CENTER LINE, MICH. Center Line Bd. Educ., 6717 10 Mile Rd., Center Line, Mich. Linn Smith Assocs. Inc., 894 S. Adams Ave., Birmingham, Mich., archt. CA 12/5/60.

J. A. Ferguson Constr. Co., 13546 Auburn Ave., Detroit 23, Mich., LB **$867,687,** (16 bidders), general contract HIGH SCHOOL ADDN., 5335 Martin Ave., DETROIT, MICH. Detroit Bd. Educ., 1354 Broadway, Detroit 26, Mich. BA 11/28, CD 11/9/61.

Lockwood Constr. Co., 2031 1st National Bank Bldg., Detroit 26, Mich., CA **$557,000,** Proj. Mich. 28-2, 60 units FAMILY HOUSING, MOUNT CLEMENS, MICH. City Housing Comn., 169 N. Walnut St., Mount Clemens, Mich. BA 11/9, CA 12/4, CD 11/16/61, under LB.

▲ **O. W. Burke Co.,** 1032 Fisher Bldg., Detroit 2, Mich., CA **$1,550,000,** est. over $1,000,000, 72,000 sq. ft. rein.-con. frame, brick, glass, aluminum panels OSTEOPATHIC HOSPITAL, E. Huron, E. Lawrence, Mill and N. Perry Sts., PONTIAC, MICH. Pontiac Osteopathic Hospital & Harold Sarko Investment Co., 16815 Jas. Couzens Hy., Detroit, Mich. CA 11/1, CD 6/1/61.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

† **Nebraska**—BA 12/29—Bureau Sports, Fisheries & Wildlife, Dpt. Interior, 1006 W. Lake St., Minneapolis 8, Minn., install prefab. SEWAGE TREATMENT PLANT and SEWER PIPE at National Fish Hatchery, Crawford, Inv. SFW-3-366.

† **Tex., Sherman**—BA 1/3—U. S. Eng., P.O. Box 1600, Fort Worth, ROCKET ASSEMBLY BLDG. ADDN. and MULTI-CUBICLE MAGAZINE, Perrin Air Force Base, ENG-41-443-62-54 $200,000. CD 11/28/61.

† **Montana**—BA 1/4—Bureau Reclamation, Dpt. Interior, Bismark, N. D., HYSHAM HILLS RADIO RELAY STATION and YELLOWTAIL RADIO BASE STATION, Missouri River Basin project, Transmission Division, 603C-37. CD 10/25/61.

† **Texas**—BA 1/4—U. S. Eng., P.O. Box 1229, Galveston, REHABILITATION of SOUTH JETTY, Galveston Harbor and channel, ENG-41-243-62-44B. CD 10/3/61.

† **Texas**—BA 1/4—U. S. Eng., P.O. Box 1229, Galveston, HARBOR and CHANNEL DREDGING, ENG-41-243-62-36. $600,000. Extended date. Plans deposit $3. CD 12/1/61.

† **Texas**—BA 1/8—Soil Conservation Service, Room 401, First National Bank Bldg., 16-20 S. Main St., Temple, EARTHFILL FLOORWATER RETARDING STRUCTURES and appurtenance, incl. excavation, common 8,890 cu. yd.; excavation, rock, 11,870 cu. yd.; placing and rolling embankment, 238,960 cu. yd., etc., Sites 12F & 33, Jim Ned Creek, Middle Colorado River Watershed (Floodwater Prevention Proj.), sites located in Coleman Co., approx. 10 to 20 mi. north and west of Coleman, SCS-21-TX-62.

† **Texas**—BA 1/9—Soil Conservation Service, Room 401, First National Bank Bldg., 16-20 S. Main St., Temple, EARTHFILL FLOODWATER RETARDING STRUCTURES and APPURTENANCES, excavation, common 27,590 cu. yd.; placing and rolling embankment; 333,900 cu. yd., etc., Sites 5, 7, and 8, Upper Washita River Watershed (Flood Prevention Program), sites located in Hemphill Co., approx. 13 to 15 mi. south of Canadian, SCS-22-TX-62.

Mo., St. Louis—BA 1/9—City, Bd. P. Service; 304 City Hall, Zone 3, MERCURY VAPOR LIGHTING FACILITIES, underground lines, etc. Kossuth and Fair Aves. to Grand Blvd. and Florissant Ave., west to Taylor Ave. $278,200. R. W. Booker & Assocs., 215 N. 11 St., Zone 1, engrs. CD 7/27/61.

Tex., Arlington—BA 1/10—Texas A & M College System, College Station, 1 story, 11,000 sq. ft., masonry, steel, concrete, blt. up roof, Central HEATING and COOLING PLANT, Arlington St. College. $400,000. Plans deposit $15. Yandell, Cowan & Love, Fort Worth National Bldg., Fort Worth, engrs. CD 11/24/61.

† **Arkansas**—BA About 1/11—U. S. Eng., P.O. Box 867, Little Rock, BANK STABILIZATION, Arbuckle Island Cut-Off Control Structures, River Mile 334.3 to River Mile 327.8 on left and right banks of Arkansas River in Crawford and Sebastian Counties, incl. approx. 16,000 lin. ft. trenchfill and stonefill revetment, 4,100 lin. ft. stonefill dikes, 900 lin. ft. bankhead, 546,000 cu. yd., excavation and grading, quarry-run stone and fines, erosion control 12.4 acres, CIVENG-03-050-62-70. $800,000. CD 9/30/59.

† **Kan., Salina**—BA On Or About 1/11—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., GUNNERY TEST RANGE, Schilling Air Force Base, ENG-23-028-62-30. $300,000. CD 9/29/61.

† **Texas**—BA 1/11—U. S. Eng., P.O. Box 1229, Galveston, DREDGING, Port Aransas, Corpus Christi Waterway Bay Channel, Hopper Slip, ENG-41-243-62-40. $300,000. CD 12/6/61.

† **Tex., Waco**—BA 1/11—U. S. Eng., P.O. Box 1600, Fort Worth, WATER SUPPLY WELL and 700 sq. ft. conc. blk. bldg., Connally Air Force Base, ENG-41-443-62-59. $300,000. CD 12/7/61.

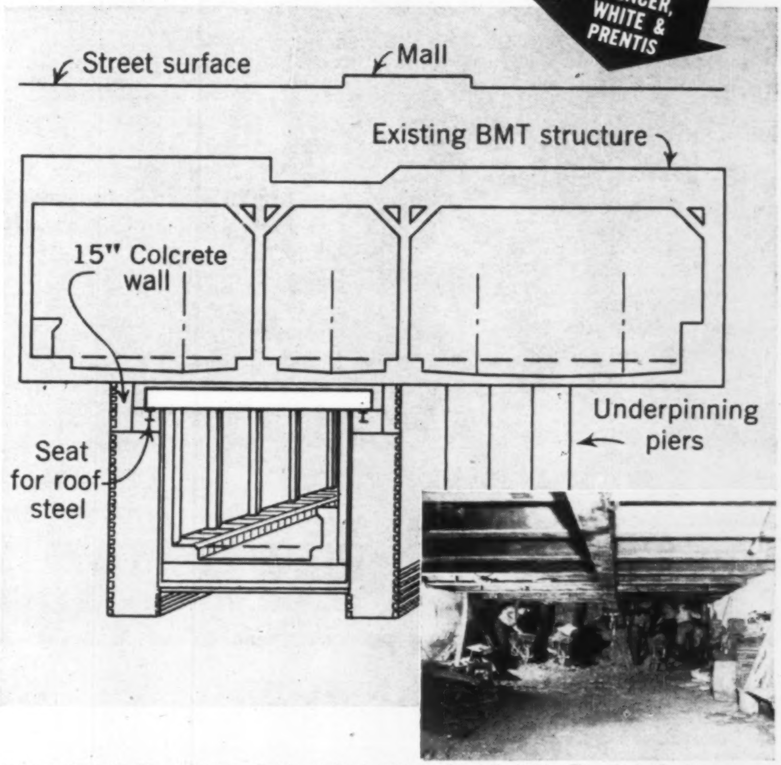
† **South Dakota**—BA 1/16—Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., Schedule, Item 1, one 25,000 kva, 3 phase, 110 grounded wye-to 69 grounded wye-kilovolt, Class OA, 60 cycle, OUTDOOR AUTOTRANSFORMER, etc.

(Continued on page 176)

PERMANENT STEEL SUBWAY ROOF DOUBLES AS SHORING

Unusual underpinning supports operating subway while new track is built beneath. Plan entails no interior shoring of existing subway, no track-shifting or changes in electric system or signals, permitting normal service during construction.

ANOTHER PROBLEM SOLVED BY SPENCER, WHITE & PRENTIS



Project: Chrystie Street Subway, Section 2, Route 112, for New York City Transit Authority
General Contractor: Cayuga Construction Corp., New York City

With headroom of 5 in. or less between the top of the new steel and the bottom of the operating subway, the use of temporary needle beams as a shoring method on this job posed a problem.

Solution: this unusual plan. The new line's permanent steel roof beams (increased in size and length) were incorporated into the underpinning system, carrying the load temporarily to the retaining walls and later to the completed new foundation.

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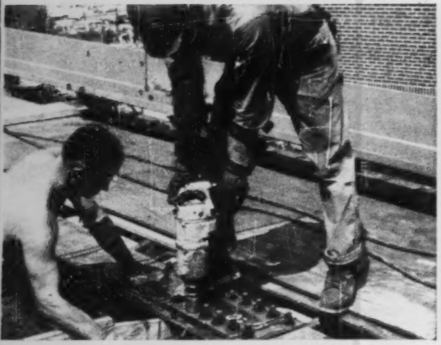

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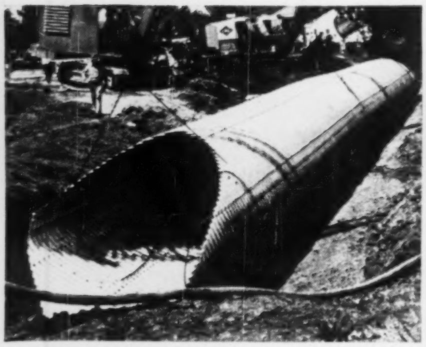
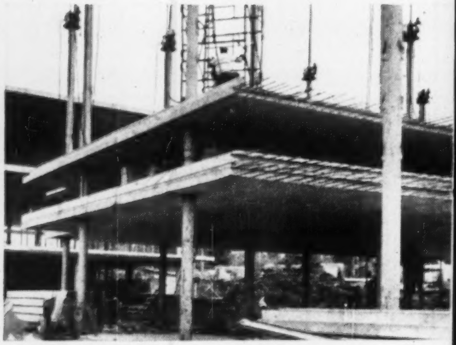


SAVE TIME: With Republic Sectional Plate Pipe-Arch, a six-man crew completely assembled this 146-foot pipe-arch in just four days. The 22-ton structure was then lifted by cranes into the excavation. Total placement time—2½ hours. This pipe-arch was made of 8-gage corrugated sectional plate, measured 10′11″ wide by 7′7″ high. Send coupon for complete information.



POURED ON THE GROUND, these reinforced concrete slabs were gradually hoisted up steel pipe columns by means of hydraulic screw jacks. The pipe is 10¾″ Republic Electric Resistance Weld—a popular choice in vertical lift-slab construction. Uniformly round, concentric, and strong, Republic Electric Weld is available in 2⅜″ through 16″ O.D. Mail coupon for data.

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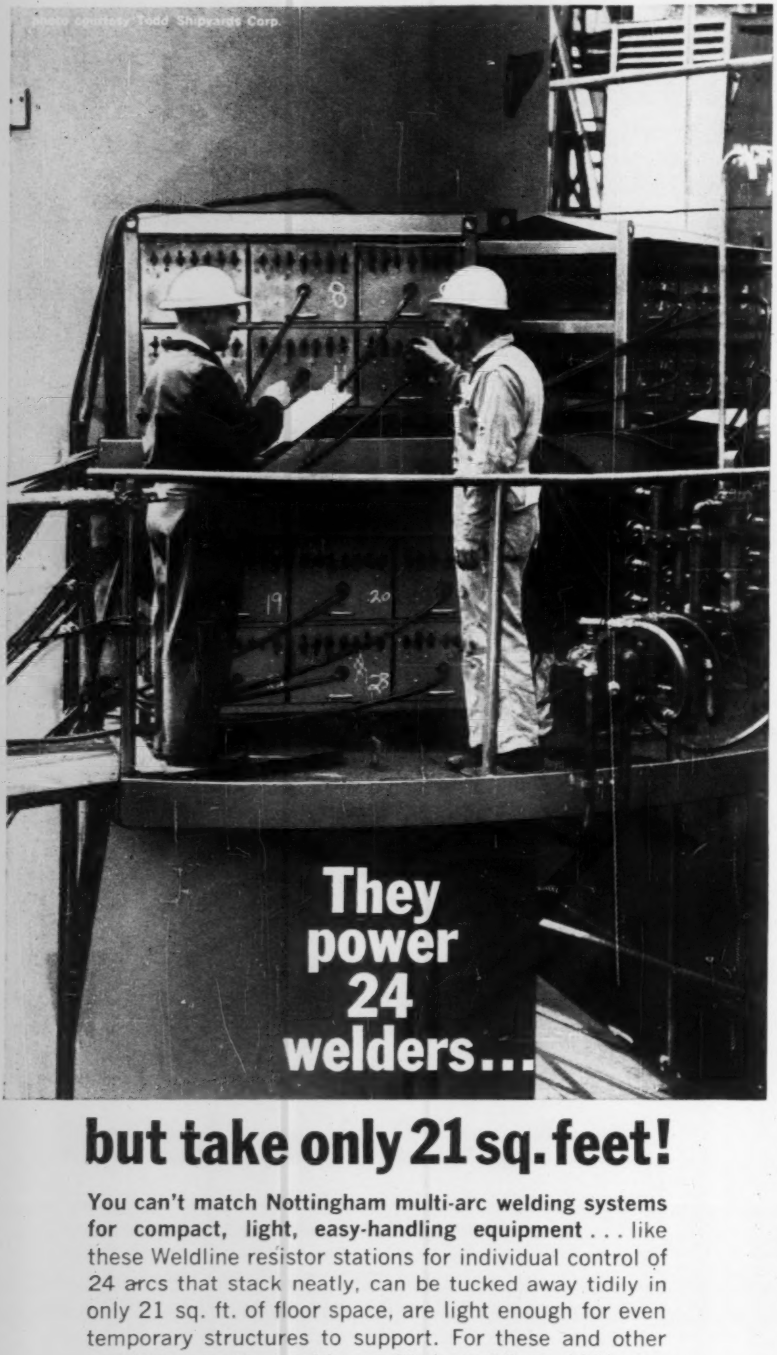
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CIRCLE 176 ON READER SERVICE CARD

(Continued from page 173)

for Flandreau Substation, Transmission Division, Missouri River Basin Proj., Inv. DS-5719. CD 9/18/61.

▲† **Oklahoma**—BA About 1/17—U. S. Eng., Box 61, Tulsa, Zone 2, RELOCATING 17.3 mi. Pawnee Co. roads, incl. bridges, gravel surf., culverts, fencing, riprap, guardrail, guideposts and mulching, Keystone Reservoir Arkansas River, CIVENG-34-066-62-77 (work to be divided into four schedules). $1,000,000. Plans deposit $10. CD 10/3/61.

† **Okla., Oklahoma City**—BA About 1/17—U. S. Eng., 100 W. Vickery Blvd., Fort Worth, **Tex.**, MAINTENANCE DOCK, LARGE AIRCRAFT, 43 x 220 ft., steel, corrugated metal HANGAR ADDN., Tinker Air Force Base, Oklahoma Co., ENG-29-0[illegible]5-62-43. Approx. $200,000. Plans deposit $10. CD 9/12/61.

▲† **Oklahoma**—BA 1/17—U. S. Eng., Box 61, Tulsa, Zone 2, RELOCATING 17.3 mi. Pawnee Co. Roads, incl. bridges, gravel surf., culverts, fencing, riprap, guardrail, guideposts and mulching, Keystone Reservoir, Arkansas River, CIVENG, 34-066-62-77. $1,000,000. Plans deposit $10. CD 12/11/61.

† **Tex., Big Spring**—BA 1/18—U. S. Eng., P.O. Box 1538, Albuquerque, N. M., FLIGHT SIMULATOR TRAINER BLDG., WEBB AIR FORCE BASE, ENG-29-005-62-18B. CD 12/5/61.

† **N. M., Clovis**—BA 1/23—U. S. Eng., P.O. Box 1538, Albuquerque, CHAPEL and ANNEX MODIFICATION, Cannon Air Force Base, ENG-29-005-62-32. $200,000. CD 12/11/61.

BUILDINGS—BA

† **Minn., Minneapolis**—BA 12/27—General Services Admin., P. Bldgs. Service, 2306 E. Bannister Rd., Kansas City 31, Mo., rehab. U. S. POST OFFICE and GARAGE, Proj. D&C-1261-2. CD 8/11/61.

† **Tex., Brownsville**—BA 12/28—General Services Admin., Business Service Center, Room 101, 1114 Commerce St., Dallas, Zone 2, renovation of the COURTS, at U. S. Post Office, Court House, and Custom House, Elizabeth and Tenth Sts.

Tex., Dallas—BA 12/28—Safeway Stores, Inc., c/o Industrial Design & Constr., 425 Madison Ave., Box 1440, Oakland, Calif., 2 story, 60 x 100 ft., brick BAKERY ADDN., $110,000. Harold A. Berry, Penthouse, Hartford Bldg., archt. Owens & Flowers, Hartford Bldg., engrs.

Tex., Gladewater—BA 1/4—Housing Auth., City of Gladewater, 50 DWELLING UNITS, TX-58-3, $500,000. G. T. Patrick, 817 Taylor St., Fort Worth, archt. CD 12/19/60.

▲ **Neb., Omaha**—BA 1/17—Arch Bishop Bergen-Mercy Hospital, Bd. Directors, 9th and Forest Ave., 5 story, 258 bed, St. Catherine's Mercy HOSPITAL. $4,914,500. Plans deposit $100. Extended date. Leo A. Daly Co., 8600 Indian Hills Dr., Zone 14, archt. CD 11/27/61.

BUILDINGS—SLC

Mo., Marlboro (St. Louis 19 P.O.)—Arlin Operating Corp., 4510 Court Sq., Long Island City 1, N. Y., soon lets contract 1 story, 72,000 sq. ft. DEPARTMENT STORE, incl. parking areas, etc., U. S. Hy. 66 for Spartan Discount Department Stores. Over $500,000. Henry M. Reitz, 111 S. Meramec Ave., Clayton 5, Mo., engr. CD 12/12/61.

HEAVY CONSTRUCTION—LB & CA

▲ **Butler Constr. Co.**, 422 Dooly Bldg., Salt Lake City, Utah, LB **$1,084,776**, SEWAGE TREATMENT PLANT, COUNCIL BLUFFS, IOWA. City, City Hall, Council Bluffs, Iowa, BA 12/11/61, CD 11/15/61;
J. J. Hanighen Co., 915 N. 20th St., Omaha, Neb., LB **$393,895**, PIPE and APPURTENANCES for SEWER (Council Bluffs, Iowa).

† **Long Constr. Co.**, P.O. Box 7091, Memphis, Tenn., CA **$289,775**, West Basin LEVEE ENLARGEMENT, right bank Little River Headwater Diversion Channel about 4 mi. west of Advance on existing levee at Levee Station 3/6 plus 00 and extending downstream approx. 5.6 mi., Bollinger Co., CIVENG-40-041-62-36, MISSOURI. U. S. Eng., P.O. Box 97, Memphis 1, Tenn. BA 11/21. CD 10/23/61.

▲† **Pensacola Constr. Co.**, 3917 Broadway, Kansas City, Mo., CA **$1,056,760**, SHOOFLY BEND REVETMENT and DIKES, Arkansas River, CIVENG-03-050-62-58, ARKANSAS & OKLAHOMA. U. S. Eng., 300 Broadway, Little Rock, Ark. BA 11/28/61. CD 11/30/61, under LB.

† **Main Electric, Inc. & A. D. Hagenstein**, Box 946, Minot, N. D., CA **$938,739**, Missouri River Basin Proj., 88 mi. of Rapid-City-Newell-Maurine 115 KV TRANSMISSION LINE, Proj. No. DC-5680, SOUTH DAKOTA. Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. BA 11/14/61. CD 11/20/61, under LB.

▲† **River Constr. Corp.**, 4837 W. Freeway, Fort Worth, Tex., **Page Communication Engineers, Inc.**, 2001 Wisconsin Ave. N.W., Wash., D. C., and **Curran & Co.**, Eklund Bldg., Great Falls, Mont., CA Est. **$5,000,000**, INSTALLATION and CHECK OUT OF MINUTE MAN CONTROL SYSTEM, Ellsworth Air Force Base, RAPID CITY, S. D. U. S. Eng., Ballistic Missile Constr. Office, 9610 Bellanca Ave., Los Angeles, Calif.

▲† **Allis-Chalmers Mfg. Co.**, 1126 S. 70th St., Milwaukee, Wis., CA **$1,251,926**, supply 165 DIESEL-ELECTRIC GENERATOR SETS, for the Minuteman ICBM installation, Ellsworth Air Force Base, RAPID CITY, S. D. U. S. Eng., Ballistic Missile Constr. Office, 9610 Bellanca Ave., Los Angeles, Calif.

KANSAS—State Hy. Comn., Great Bend, Bids opened 11/30, ROADS,
Kan.—**Russell Ralph Co., Inc.**, Box 799, 1st and Topeka, Topeka, Kan., LB **$227,572**, grading 6.656 mi. 45-5 F 020-4(2) Pt. II, Barton Co.;

Kan.—**Bemis Tractor Service**, 3220 10th St., Box 978, Great Bend, Kan., LB **$238,403**, grading 8.844 mi. 45-5 F 020-4(2) Pt. I, Barton Co. CD 11/9/61.

KANSAS—State Hy. Comn., Chanute, Bids opened 12/5, ROADS,

Kan.—**Sherwood Constr. Co., Inc.**, P.O. Box 994, Wichita 1, Kan., LB **$163,272**, grading 4.959 mi. 169-1 F 067-1(8), Allen Co.;

Kan.—**Amino Bros. Co., Inc.**, 1018 S. Mill St., Kansas City, Kan., LB **$202,985**, grading 4.463 mi. 75-16 F 063-2(9), Coffey Co. CD 11/9/61.

El Paso Natural Gas Co., El Paso Natural Gas Co. Bldg., El Paso, Tex., Owner Builds, **$200,000**, GAS GATHERING LINES, Odessa, West, TEXAS. CD 6/20/60.

† **Snodgras & Sons Constr. Co., Inc.**, 1451 S. McLean Blvd., Wichita, Kan., CA **$253,730**, RE-ENTRY VEHICLE FACILITIES for Titan II Missile Launch Facilities, McConnell Air Force Base, WICHITA, KAN. U. S. Eng., Ballistic Missile Constr. Office, 5651 W. 95 St., Los Angeles, Calif. CD 11/2/61.

Gibraltar Constr. Co., Box 5602, Dallas, Tex., LB **$428,229** (7 bidders), South Austin SANITARY SEWER, Tunnel and River Bluff Sect., AUSTIN, TEX. City, City Hall, Austin, Tex. BA 12/1/61. CD 11/21/61.

Viking Constr. Co., Inc., 2138 Welch St., Houston, Tex., LB **$397,925**, STORM SEWERS for Sports Stadium, HOUSTON, TEX. Harris County, Comrs. Court, Courthouse, Houston, Tex. CD 10/12/61, under Unclassified.

Hoffman & Borders, P.O. Box 2096, Waco, Tex., CA **$555,200**, Cont. No. 30, CHEMICAL BLDG. for Water Dpt., WACO, TEX. City, City Hall, Waco, Tex. BA 11/24/61. CD 11/30/61, under LB.

† **Bureau Indian Affairs**, Billings Area Office, 804 North 29th St., Billings, Mont., rejected bids Nov. 16, APPLY ASPHALT MEMBRANE LINING Pablo A"A Canal system, Flathead Irrigation Project, Inv. No. 250-62-538, MONTANA. CD 11/10/61.

† **WYOMING**—Bureau P. Rds., Bldg. 53, Denver Federal Center, Denver, Colo., ROAD,

Forgey Bros. Co., Box 255, Casper, Wyo., CA **$777,230**, grading, bit. stab. base, 7.681 mi. hy. Sublette Co. BA 11/2/61. CD 11/10/61, under LB.

Colorado Pipe Lines, Inc., 603 8th St., Greeley, Colo., LB **$420,309** (10 bidders), installing WATER TRANSMISSION FACILITIES, LONGMONT, COLO. Little Thompson Water Association, Longmont, Colo. BA 11/1/61. CD 10/4/61.

Robert Dougan, 110 W. 13th Ave., Denver, Colo., LB **$210,375** (6 bidders), furnishing, installing FILTER PLANT and Backwash Tank (Longmont, Colo.).

▲ **NEW MEXICO**—State Hy. Dpt., State Hy. Dpt. Bldg., Cerrilos Rd., Santa Fe, ROADS,

N. M.—**Broun Constr. Co.**, 3525-4th St. NW, Albuquerque, N. M., CA **$414,308**, est. $475,306, two lane, grade, sub-base, base course, plant mix surf., utility adjustments and misc. constr., 4.343 mi., Fed. Aid Proj. No. F-053(1)6, on NM 3 Questa-North, Taos Co.; CA **$134,531**, est. $161,298, grade, base course, plant mix surf. 1 conc. and steel bridge, utility adjustments, misc. constr., 1.17 mi. Fed. Aid Proj. No. S-1171(1), NM 28 Stub Fort Selden Connection to I-24, Dona Ana Co.;

N. M.—**O. D. Cowart Constr. Co.**, Bridge Blvd., S. W., Albuquerque, N. M., CA **$1,271,798**, est. $1,292,846, two lane, grade, base course, cement treated base, two major CBC, plant mix surf., utility adjustments, misc. constr., 7.53 mi., Fed. Aid Proj. No. F-032-1(9), on US 550, approx. 0.13 mi. North of Axtec-North, 7.53 mi., San Juan Co.;

N. M.—**Burn Constr. Co., Inc.**, Las Cruces, N. M., CA **$156,586**, est. $161,234 grade, base course, 1 course surf. treatment, utility adjustments and misc. constr., 3.92 mi., Fed. Aid Projs. No. S-1128(1) & S-1129(1), NM 227 & 228 Vado and Mesquite Connection to I-10, Dona Ana Co., Grand total $1,977,222. BA 12/8/61. CD 11/21/61.

BUILDINGS—LB & CA

Fuel Economy Engineering Co., 510 New York Bldg., St. Paul, Minn., CA **$776,985**, two bldgs., 71 units HOUSING for ELDERLY, MINNEAPOLIS, MINN. Minneapolis Housing and Redevelopment Auth., 215 Public Health Center Bldg., Minneapolis, Minn. BA 11/14. CD 11/17/61, under LB.

Magney-Iverson Constr. Co., 20 Shady Oak Rd., Hopkins, Minn., CA **$547,800**, 7 story 49 unit HOUSING for the ELDERLY, University Ave. and 3 Ave. N.E. MINNEAPOLIS, MINN. Minneapolis Housing & Redevelopment Auth., 216 Public Health Center Bldg., Minneapolis, Minn. BA 11/1. CD 11/7/61, under LB.

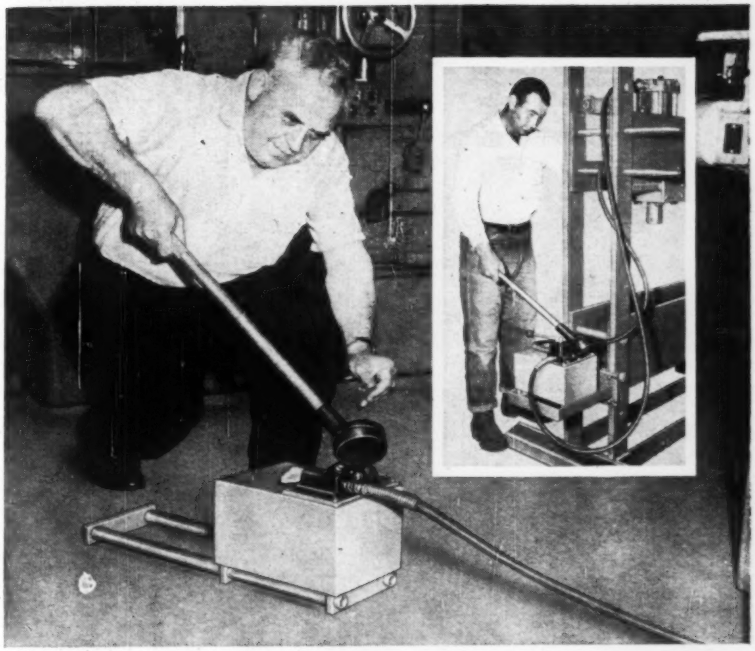
▲ **Sheehy Constr. Co.**, 160 N. Larpenteur Ave., St. Louis, Minn., LB **$1,758,000**, (11 bidders), 2 story, 200 units high-rise APARTMENTS, Valley and Canada Sts., ST. PAUL, MINN. St. Paul Housing & Redevelopment Auth., 60 E. Fourth St., St. Paul, Minn. BA 12/6. CD 11/14/61.

Francis Vatterott, Realty & Bldg. Co., 9111 Gravois Rd., Affton 23, Mo., Owner Builds, **$450,000**, 12 brick RESIDENCES, Gary Gardens No. 2 Subdivision near Green Park and Tesson Ferry Rds. and 24 RESIDENCES, Meadow Hills Subdivision at Forman Rd. and Dana Ave., AFFTON (ST. LOUIS 23 P.O.), MO.

Kodner Constr. Co., 1215 Timber Run Dr., Creve Coeur 41, Mo., Owner Builds, **$427,457**, 27 brick DWELLINGS, Bellerive Estates subdivision adjacent to Mason and Olive St. Rds., CREVE COEUR (ST. LOUIS 41 P.O.), MO.

▲ **H. Pueser & Son**, 6165 W. Florissant Ave., St. Louis 20, Mo., Owner Builds, **$8,000,000**, first year over $1,000,000 (5-6 year program), 500 HOMES, Stonehaven Subdivision, Derhake Rd., New Halls Ferry Rd., JENNINGS (ST. LOUIS 36), MO.

▲ **L. J. McNeary Constr. Co.**, 9715 Gravois Ave., St. Louis 23, Mo., Owner Builds, **$525,000**, 39 RESI-



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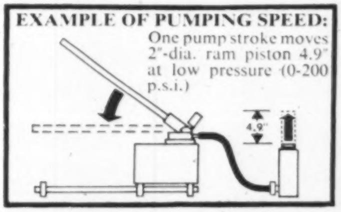

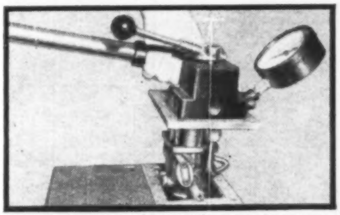

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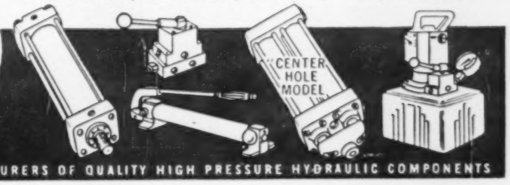

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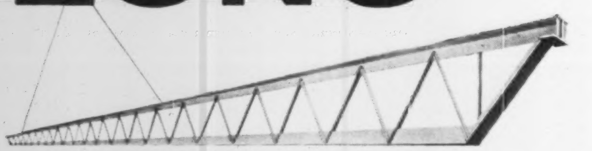

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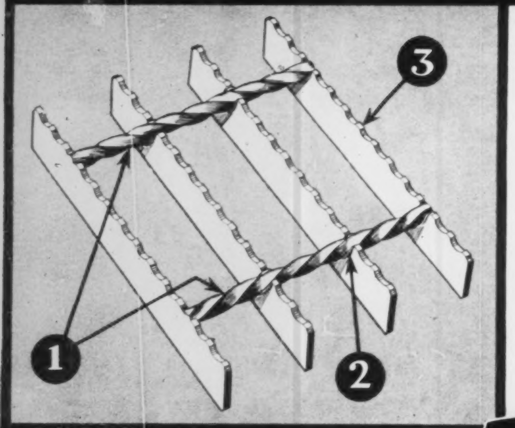

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CIRCLE 178 ON READER SERVICE CARD

DENCES, Five Oaks Subdivision adjacent to Hy. 21 and Lindbergh Blvd.; **$1,250,000**, 100 RESIDENCES, Telegraph Rd. south of Lindbergh Blvd. in Golden Valley Estates Subdivision; **$426,000**, 27 RESIDENCES, Concord Oak Subdivision adjacent to Lindbergh Blvd. and Hy. No. 21, MEHLVILLE (ST. LOUIS 29), MO. Grand total $2,201,000.

▲ **MacDonald Inter-American Corp.**, 1320 S. Grand Blvd., St. Louis 4, Mo., CA Est. **$1,000,000**, 64 lane BOWLING CENTER, Normandy Shopping Center adjacent to Natural Bridge and Lucas and Hunt Rds., NORTHWOODS (ST. LOUIS 20 P.O.), MO. Edward Mixon, c/o 4401 Hampton Ave., St. Louis 10, Mo. William L. Rudolph & Assocs., 131 N. Hudson Ave., Pasadena, Calif., archts. Bowling Corp. of America, 120 Broadway, New York, N. Y., lessee.

Arrow Constr. Co., 8129 Delmar Blvd., University City, 30, Mo., Owner Builds, Over **$500,000**, 2 story, 100-unit MOTEL, RESTAURANT, SWIMMING POOL, etc., U. S. Interstate No. 70 and 5 St., ST. CHARLES, MO. Meyer Loomstein, 1933 Woodson Rd., Overland 14, Mo., archt.

▲ **Alport Constr. Co.**, 502 Title Guaranty Bldg., 706 Chestnut St., St. Louis 1, Mo., CA **$1,586,026**, general contract 112-unit APARTMENT C-A and GAS METER HOUSE, incid. work, ST. LOUIS, MO. St. Louis Housing Auth., 2031 Olive St., St. Louis 3, Mo. BA 10/26, CA 12/4. CD 11/1/61, under LB.

A. H. Haeseler Bldg. & Constr. Co., 2346 Palm St., St. Louis 7, Mo., LB **$305,466**, (12 bidders), 1 story, 129 x 212 ft. MAINTENANCE BLDG. and REMODELING existing bldg., etc. 1901 Sulphur Ave., ST. LOUIS, MO. Metropolitan St. Louis Sewer Dist., 2000 Hampton Ave., St. Louis 10, Mo. Study, Farrar & Majers, 794 Arcade Bldg., St. Louis 1, Mo., archts.

El Dorado Pub Schools, El Dorado, Ark., rejected bids Oct. 10, (A) Murmil ELEMENTARY SCHOOL and (B) West Wood ELEMENTARY SCHOOL, EL DORADO, ARK. LB **$586,844**, CD 11/3/61, under LB.

The Baldwin Co., 322 Gaines St., Little Rock, Ark., LB **$621,000**, HOSPITAL WING and NURSING HOME for Forrest Memorial Hospital, FORREST CITY, ARK. St. Francis County, Courthouse, Forrest City, Ark. BA 12/5/61. CD 11/10/61.

▲ **Pickens & Bond Constr. Co.**, Gazette Bldg., Little Rock, Ark., CA **$2,000,000**, two 11 story Le Classique Terrace APARTMENTS, Westrock Urban renewal area, Cantrell and Cedar Hill Rds., LITTLE ROCK, ARK. Elmo Walker Trust, c/o Wythe Walker, Tower Bldg., Little Rock, Ark. CD 3/20/61.

J. E. Kreig, Inc., Box 408, Fargo, N. D., LB **$596,000**, 5 story, 66 x 131 ft., L shaped, 100 bed RETIREMENT HOME, 1329 3rd Av. S., FARGO, N. D. American Lutheran Homes, Inc., 1026 S. 17th St., Fargo, Ill. Foss & Co., 28 N. 3rd St., Moorehead, Minn., archts.-engrs. BA 11/29/61. CD 11/8/61.

▲ **Lueder Constr. Co.**, 614 Redick Tower, Omaha, Neb., CA Est. **$1,500,000**, 150 rooms, 9 story, PENTHOUSE MOTOR HOTEL, with restaurant, bar, swimming pool, at 31 and Dodge Sts., OMAHA, NEB. Redlim Realty Co., 807 N. 50th St., Omaha, Neb. CD 11/14/60.

Shelton & Son Contractors, 2502 N. 84th St., Omaha, Neb., CA **$502,000**, general constr. 500 pupil cap. West Belveders SCHOOL, library, multi-purpose room, OMAHA, NEB. Bd. Educ., 3902 Davenport St., Omaha, Neb. BA 10/31/61. CD 11/3/61, under LB.

▲ **City of Tulsa**, City Hall, Tulsa, Okla., rejected bids Dec. 5, CIVIC CENTER ASSEMBLY, TULSA, OKLA. LB **$6,839,650**, CD 12/11/61.

▲ **W. R. Grimshaw Constr. Co.**, Enterprise Bldg., Tulsa, Okla., LB **$6,839,650**, est. $6,700,000, (7 bidders), CIVIC CENTER ASSEMBLY, TULSA, OKLA. City, City Hall, Tulsa, Okla. BA 12/5/61. CD 11/28/61.

Rose Constr. Co., P.O. Box 175, Abilene, Tex., LB **$532,000**, est. $750,000, seven WARDS, ABILENE, TEX. Bd. for Texas State Hospitals & Special Schools, 4405 Lamar Blvd., Box S, Capitol Sta., Austin, Tex. BA 12/7/61. CD 11/30/61.

C. D. Yarbrough Constr. Co., P.O. Box 851, Austin, Tex., LB **$814,000**, ten 1 story, 60 x 140 ft., WARD BLDGS., Job No. 418, AUSTIN, TEX. Bd. for Texas State Hospitals & Special Schools, 4405 Lamar Blvd., Box S, Capitol Station, Austin, Tex. BA 12/7/61. CD 11/30/61.

Eitze-Kitchens Constr. Co., P.O. Box 3358, Austin, Tex., LB **$688,000**, FIELD STADIUM ADDNS. to Lake Highlands Elementary and White Rock Elementary Schools, RICHARDSON, TEX. Richardson Ind. School Dist., Richardson, Tex. BA 11/30/61. CD 11/1/61.

Max M. Kaplan Constr. Co., 8507 Wakefield St., San Antonio, Tex., Owner Builds, **$415,000**, 34,100 sq. ft., 64 unit APARTMENT, 123 Rampart St., SAN ANTONIO, TEX. Wallace B. Thomas, 612 Brooklyn Ave., San Antonio, Tex., archt.

▲ **William Matera**, 4715 Fredericksburg Rd., San Antonio, Tex., LB **$1,009,330** (8 bidders), Walter E. Krueger Junior HIGH SCHOOL, in East Terrell Hills, SAN ANTONIO, TEX. Northeast Ind. School Dist., 10214 Sommers Dr., San Antonio, Tex. Harvey P. Smith & Assocs., 117 El Prado Dr. W., San Antonio, Tex., archts. Reynolds & Morgan, Insurance Bldg., San Antonio, Tex., engrs. CD 9/18/61.

L. W. Stafford, Inc., P.O. Box 114, Sherman, Tex., LB **$736,900**, est. $1,000,000, WOMEN'S DORMITORY, STUDENT UNION, SHERMAN, TEX. Austin College, Sherman, Tex. BA 11/30/61. CD 11/28/61.

M. D. Misso Contg. Co., 254 Hickory St., Paris, Tex., LB **$685,698**, 1 story, 93,000 sq. ft., steel frame, brick WAREHOUSE and FACTORY, SULPHUR SPRINGS, TEX. H. D. Lee Garment Factory, c/o Latham White & Assocs., archts., 425 S. Field St., Dallas, Tex. BA 12/5/61. CD 11/22/61.

▲ **Warner Constr. Co.**, P.O. Box 769, San Angelo, Tex., CA **$1,375,213**, 3 story, 96,000 sq. ft., brick, A/C, heating, vent., women's DORMITORY, WACO, TEX. Baylor University, 1405 S 5th St., Waco, Tex. BA 10/31/61. CD 11/14/61, under LB.

J. Jones, Inc., Contractor, 3910 7 Ave. S., Great Falls, Mont., CA **$532,579**, Loy SCHOOL, GREAT FALLS, MONT. School Dist. 1, Great Falls, Mont. CA 12/4/61. CD 1/21/60.

John C. Cornell, Inc., P.O. Box 1157, Clovis, N. M., LB **$925,563**, est. $900,000, PACKING PLANT ADDN., CLOVIS, N. M. City, City Hall, Clovis, N. M. BA 12/7/61. CD 11/21/61.

† **D. W. Falls, Inc.**, P.O. Box 95, Albuquerque, N. M., LB **$186,462**, WATER DISTRIBUTION SYSTEM, Inv. 291-62-8, White Rock, LOS ALAMOS, N. M. Atomic Energy Comn., Los Alamos Area Office, Los Alamos, N. M. BA 11/28/61. CD 11/1/61.

FAR WEST

HEAVY CONSTRUCTION—BA

† **Washington**—BA 12/28—Bureau Reclamation, Dpt. Interior, Ephrata, Columbia Basin Proj., CONCRETE LINING for W44A LATERAL, BLOCK 77, 100C-499. CD 9/30/58.

† **Nevada**—BA 1/4—National Park Service, Dpt. Interior, 601 Nevada Hy., Boulder City, WATER and SEWERAGE SYSTEMS ADDNS., Boulder Beach and Temple Bar, Lake Mead National Recreation Area. CD 3/5/56.

† **Hawaii, Honolulu**—BA 1/11—U. S. Eng., Fort Armstrong, Honolulu, AWG MISSILE STORAGE and CHECK-OUT FACILITIES, Hickam Air Force Base, Oahu, ENG-94-612-62-7B.

† **Ore., Corvallis**—BA 1/16—U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash., three 8,420 sq. ft. masonry BUILDINGS, Adair Air Force Base, ENG-62-37, $200,000.

† **Utah and Wyoming**—BA 1/16—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Zone 25, Colo., Schedule 1, one CONTROL SYSTEM for 66 in. ring-follower gates for the river outlets at Flaming Gorge Dam, Flaming Colorado River Storage Project, DS 5720. CD 10/25/61.

† **Arizona**—BA 1/18—Bureau Reclamation, Dpt. Interior, Phoenix, constr. Davis POWERPLANT 69-KV SWITCHYARD ADDNS., Parker Davis Proj., DC-5711, CD 10/25/61.

BUILDINGS—BA

▲ **Wash., Cheney**—BA 12/28—Eastern Washington College of Educ., 13 story, rein.-con., steel MEN'S DORMITORY. Over $1,000,000. Plans deposit $50. Culer, Gale & Martell, Realty Bldg., Spokane, archts. Norrie & Davis, Realty Bldg., Spokane, engrs. CD 7/28/61.

Wash., Cheney—BA 1/4—Eastern Washington State College, 50,000 sq. ft. steel frame FOOD SERVICE BLDG. Over $500,000. Plans deposit $50. Funk, Murray & Johnson, 164 Division St., Spokane, archts. CD 1/23/59.

▲ **Calif., Al Tahoe**—BA 1/5—Barton Memorial Hospital, c/o John Badgley, archt., 1101 Marsh St., San Luis Obispo, GENERAL HOSPITAL. $1,000,000. CD 2/21/61.

HEAVY CONSTRUCTION—LB & CA

▲ **IDAHO**—State Dpt. Hys., 3211 State St., Boise, ROAD,

Rogers Constr. Co., 11760 NE Glisan St., Portland, Ore. CA **$1,955,423**, 4-lane divided roadway, drainage structures, plantmix bit. surf. 220 ft. concrete underpass 5.148 mi. Interstate 15, Oneida Co. BA 11/28/61, CA 12/8/61. CD 12/5/61, under LB.

† **Ford Constr. Co.**, 935 North 1700 West, Provo, Utah, LB **$288,415**, EARTHWORK and STRUCTURES, 2.7 mi. DIKES with riprap, corr-metal culverts, gates, division boxes, etc., Provo River Channel revision, Provo River Project, 400C-174, UTAH. Bureau Reclamation, Dpt. Interior, 32 Exchange Pl., Salt Lake City, Utah. BA 11/28/61. CD 11/10/61.

† **ARIZONA**—Bureau Indian Affairs, 3500 N. Central, Phoenix, rejected bids Nov. 20, BRIDGES,

one 42 ft. and three 75 ft. 3 span precast conc. beam unit bridges on Colorado River Indian Reservation on Rte. 1, Spec. Nos. CIRI-62-R1, R2, R3 and R4. CD 10/26/61.

† **Frank G. Furman, Roberts Co., Lowe and Watson, and Lowe and Watson Constr. Co., Inc.**, 1265 Kendall Dr., San Bernardino, Calif., LB **$683,794**, Colorado River FRONT WORK and LEVEE SYSTEM, earthwork, riprap for South Gila Levee, Proj. 300C-157, ARIZONA. Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver 25, Colo. BA 11/21/61. CD 11/6/61.

† **L & F Machine Co. & Boller & Chivens Inc.**, 2110 Belgrove Ave., Huntington Park, Calif., CA **$482,877**, TELESCOPE MOUNTING, Naval Observatory, FLAGSTAFF, ARIZ. Bureau Yards & Docks, 1220 Pacific Hy., San Diego, Calif. CD 8/18/60.

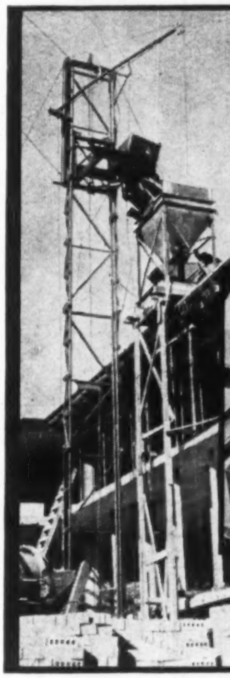
NEVADA—State Hy. Dpt., State Hy. Bldg., Carson City, ROAD,

Stout Constr. Co., Las Vegas, Nev., CA **$759,303** (7 bidders), constr. 17.159 mi. portion of primary hy. system, on U.S. Hy. 95 bet. 26½ mi. north of Beatty and 22½ mi. south of Goldfield, Nye Co. BA 12/7/61. CD 11/20/61.

▲† **R. A. Heintz Constr. Co.**, Box 1806, Portland, Ore. LB **$1,055,223**, est. $998,950, (6 bidders), Columbia Basin Proj., EARTHWORK STRUCTURES, Block 23, LATERALS and WASTEWAYS, Wahluke Branch Canal near Othello, Franklin Co., Spec. DC 5698, WASHINGTON. Bureau Reclamation, Dpt. Interior, Bureau Re-

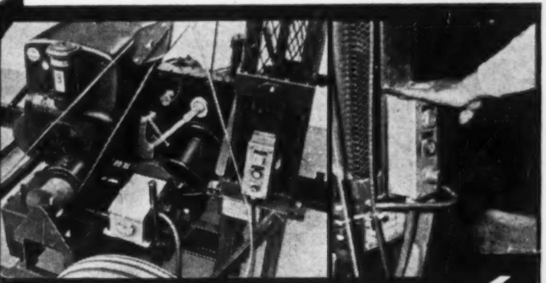
(Continued on page 182)

33-36 Yds of Concrete UP Three Stories-**ONE HOUR!**



Using a *Buck GA-25-H* Push Button Automatic Hoistower, Dugan & Meyers Construction Company of Cincinnati recently maintained this average on the job pictured at the left.

Interchangeable with the standard platform, the self-dumping concrete bucket handles high volume, pours at the touch of a button. Combining all of the patented **Buck Hoistower** features the **GA-25-H** is the most modern portable hoist made.



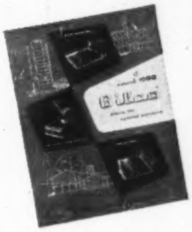
BUCK EQUIPMENT CORP.
720 Anderson Ferry Rd Cincinnati 38, Ohio
Write or Phone 471-8580

CIRCLE 43 ON READER SERVICE CARD

HORIZONTAL DOORS:

heavy-duty weathertight

spring-balanced for easy opening!



Choose Bilco doors to replace those ponderous, old-fashioned floor- and sidewalk-access doors. Bilco spring-balanced doors feature built-in drainage, long trouble-free life.

FREE CATALOG

Tells all you need to know about sidewalk and basement doors, roof scuttles, ceiling doors and flush floor doors; measurements, weights, specification data!

Bilco®

The Bilco Co.,
Dept. EN-12
New Haven, Conn.

HORIZONTAL SPRING-OPERATED DOORS

CIRCLE 179 ON READER SERVICE CARD

DOWN
PUBLIC PARKING
PARKING
PARKING
PARKING

ECONOMICAL ROUND CONCRETE COLUMNS formed with **Sonotube**® Fibre Forms

Round concrete columns . . . Attractive in buildings, practical in bridges, overpasses . . . Round concrete columns . . . economical supports in any structure . . . SONOTUBE Fibre Forms for round concrete columns—to speed construction and reduce costs . . . Wherever round concrete columns are required, use SONOTUBE Fibre Forms . . . Lightweight, easy to handle . . . can be placed, braced, poured and stripped quicker.

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CANADA: Brantford, Ont.

SAVE TIME, MONEY, LABOR with *Sonotube*® Fibre Forms

Contractors and owners save time, save labor, save money with SONOTUBE Fibre Forms . . . fastest, most economical forming method for any size, any type round concrete column . . . Available in sizes 6″ to 48″ I.D., standard 18′ lengths or specified lengths . . . Five distinct types to meet various job requirements . . . See our catalog in Sweet's, or write for complete information and prices.

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5940

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❶ *reliable product*

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- IRONITE WATERPROOFING is not merely an outer coating
- Its fine particles are carried in suspension in water and thus actually work their way into any and all voids or cavities in the concrete, brick or other porous surfaces
- These particles then oxidize and expand to become a part of the mass to which the IRONITE WATERPROOFING is applied
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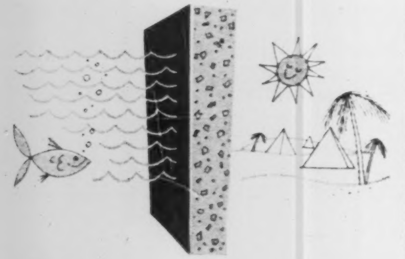

❷ *reliable application*

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IRONITE COMPANY

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CIRCLE 182 ON READER SERVICE CARD

(Continued from page 179)

clamation Bldg., Division Ave., C St. N.W., Ephrata, Wash. BA 12/7/61. CD 10/30/61.

† **Murphy Bros., Inc.**, Box 2193, Spokane, Wash., CA **$795,078**, GRADING, SURF. North Shore Access Road to Lower Monumental Dam Site, Snake River, Proj. 62-11, WASHINGTON. U. S. Eng., City-County Airport, Walla Walla, Wash. BA 11/14/61. CD 11/20/61, under LB.

T. W. Traverso Constr. Co., 11180 E. Marginal Way, Seattle, Wash., CA **$518,619**, general contract HANGAR and SHOP BLDGS., King Co. Airport, SEATTLE, WASH. King Co., County-City Bldg., Seattle, Wash. BA 11/17/61. CD 11/22/61, under LB.

Calabrese & Sons, 4116 94th Ave. S.E., Mercer Island, Wash., CA **$854,840**, CLEARING, GRUBBING, DRAINING, B. CONC. PAVING, LIGHTING for AIRPORT, TACOMA, WASH. City, County-City Bldg., Tacoma, Wash. BA 11/27/61. CD 12/4/61, under LB.

† **Bonneville Power Admin.**, 1001 N.E. Lloyd Blvd., Portland, Ore., repected bids Nov. 28, CLEARING 0.7 mi. RIGHT of WAY, REEDSPORT-COOS BAY 115 kv LINE, Proj. 9384, OREGON. CD 11/10/61.

CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles, Bids opened 12/7, ROADS,

Calif.—**Wes J. Foster**, 11220 Commonwealth St., Fullerton, Calif., LB **$187,477** (4 bidders), grading, paving 0.9 mi. 4 lane expressway State Sign Rte. 111 between 0.6 mi. west of China Creek and San Rafael Dr. in Palm Springs, Riverside Co.;

Calif.—**Westates Electrical Constr. Co.**, 8900 Ballanca Ave., Los Angeles 18, Calif., LB **$119,385** (7 bidders), modifying traffic signals at 37 intersections on Valley Blvd. (State Hy. Rte. 77), in Rosemead, San Gabriel and Alhambra, Los Angeles Co. CD 11/3/61.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento, Bids opened 12/6, ROAD,

Dan Caputo Co., 650 Race St., San Jose, Calif., LB **$1,186,122**, (6 bidders), interchange on Warren Freeway at Moraga Ave., Alameda Co. CD 11/2/61.

CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles, ROAD,

Osborn Constructors, 1443 Edgecliff Lane, Pasadena, Calif., CA **$546,157**, grading, paving to constr. initial 2 lanes of future 4 lane hy. on 2.1 mi. FAS Co. Rd. 924 (Bear Valley cut-off) between Atchison, Topeka & Santa Fe R.R. and Apple Valley Rd., San Bernardino Co. BA 11/9, CA 12/5. CD 11/15/61, under LB.

† **Roy C. Price**, 5690 So. Union Ave., Bakersfield, Calif., CA **$784,585**, est. $1,005,400, expand WATER SUPPLY SYS. Naval Ordnance Test Station, China Lake, Spec. 36862, INYOKERN, CALIF. South Div. Bureau Yards & Docks, 1220 Pacific Hy., San Diego 32, Calif. BA 11/28, CA 12/6, CD 12/4/61, under LB.

† **Quiller Constr. Co.**, 8374 W. 3 St., Los Angeles, Calif., CA **$582,400**, TITAN II RE-ENTRY VEHICLE FACILITIES, Vandenberg Air Force Base, ENG-04-353-62-29, LOMPOC, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles 17, Calif. BA 11/21. CD 11/28/61, under LB.

▲ **Saliba-Kringlen, G. L. Cory, Inc., and G.M.A.**, P.O. Box 11013, San Diego 11, Calif., LB **$5,161,733**, est. $6,174,000 (4 bidders), SEWAGE TREATMENT PLANT, Point Loma, SAN DIEGO, CALIF. City, Rm. 161, Civic Center Bldg., San Diego 1, Calif. CD 12/4/61, under LB.

BUILDINGS—LB & CA

▲ **University of Alaska,** College, Alaska, cancelled bids to have been opened Dec. 20, rein.-con., steel frame GYMNASIUM, swimming pool, COLLEGE, ALASKA. **$1,600,000.** Will re-advertise. CD 11/9/61.

Paulsen Constr. Co., 1425 Jefferson, Salt Lake City, Utah, LB Est. **$600,000,** 2 story, 120,000 sq. ft. SHOP BLDG., PROVO, UTAH. Brigham Young University, Provo, Utah, BA 11/16/61. CD 11/8/61.

† **Lembke Constr. Co., Inc.**, 1719 5th Ave. N.W., P.O. Box 455, Albuquerque, N. M., CA **$1,313,550,** est. $1,315,937 (3 bidders), SCHOOL FACILITIES, Shonto, Proj. No. BU603-371, ARIZONA. Bureau Indian Affairs, Dpt. Interior, P.O. Box 8327, Albuquerque, N. M. BA 11/21/61, CA 12/7/61. CD 10/17/61.

Sceva Constr. Co., N. 2928 Madelia St., Spokane, Wash., LB **$714,698** (9 bidders), general contract thirteen 2 story APARTMENTS, PULLMAN, WASH. Washington State University, Pullman, Wash. BA 12/5/61. CD 11/13/61.

▲ **Anaheim School Dist.**, 123 N. Citron St., Anaheim, Calif., rejected bids Nov. 2. Oak JUNIOR HIGH SCHOOL, Proj. 1, ANAHEIM, CALIF. LB **$1,176,912** CD 11/9/61, under LB.

Cotton Constr. Corp., P.O. Box 236, 1735 McKinley, National City, Calif., CA **$996,633**, Orange Glen HIGH SCHOOL, ESCONDIDO, CALIF. Escondido Union High School Dist., 240 South Maple St., Escondido, Calif. BA 1/14, CA 12/5, CD 11/20/61, under LB.

Steed Bros. Constr. Co., Box 350, Alhambra, Calif., CA **$510,896**, 22,000 sq. ft. SCIENCE BLDG. ADDN., Glendale College, 1500 N. Verdugo Rd., GLENDALE, CALIF. Glendale Unified School Dist., 411 E. Wilson Ave., Glendale, Calif. BA 11/2. CA 11/7. CD 11/9/61, under LB.

▲ **Haas & Haynie General Contractor**, 244 Pine St., San Francisco, Calif., CA **$7,000,000**, 13 story, steel frame Gateway Bldg. OFFICE, Century City, HOLLYWOOD, CALIF. Webb & Knapp, Inc., and Aluminum Co. of America, 400 S. Beverly Dr., Beverly Hills, Calif. BA 10/31. CD 9/26/61 under Calif., Los Angeles.

Sam C. Harris & Assoc., 6919 North Ave., Lemon Grove, Calif., CA Est. **$701,100,** 45 RESIDENCES and GARAGES, Country Casual Homes, Unit No. 2, SAN DIEGO, CALIF. Country Casual Homes, P.O. Box 607, Lemon Grove, Calif.

CANADA

BUILDINGS—BA

▲ **Que., Drummondville**—BA 12/27—Youth & Social Welfare Dpt., Parliament Bldgs., Quebec City, 2 story, 350 x 400 ft. concrete, brick, rein.-con. TRADE SCHOOL, Ringuet St. $1,000,000. Plans deposit $200. Extended date. Paul Labranche, 800 Blvd. Mercure, Drummondville and Emilen Bujold, 6746 Moison St., Montreal, archts. Cote, Lemieux, Carignan & Bouque, 144 Vimy St. N, Sherbrooke, engrs. CD 12/5/61.

▲ **Ont., Ottawa**—BA 1/8—Canadian Broadcasting Corp., Wellington St., 7 story, 3 wing HEADQUARTERS BLDG., Riverside Dr. and Bronson Ave. $3,000,000. D. G. McKinstry, c/o owners, archt. CD 8/26/57.

Man., Winnipeg—BA 1/12—Canadian Labor Congress, 3B-165 James St., 3 story, bsmnt., rein.-con. UNION CENTRE, $650,000. Plans deposit $100. Dwight R. Johnston, 1854 Portage Ave., archt. CD 6/8/59.

BUILDINGS—SLC

Man., Winnipeg—Canadian Wheat Bd., 423 Main St., soon lets contract 7 story OFFICE ADDN., McDermot and Main Sts. Over $500,000. Smith, Carter, Searle Assocs., 65 Dewdney Ave., archts. CD 11/29/61.

▲ **N. S., Halifax**—Maxwell Cummings & Co., c/o Ian Martin & Victor Prus, archts., 4693 Sherbrooke St. W., Montreal, Que., soon lets contract 11 story, 217-unit APARTMENT, Spring Garden Rd., $2,500,000. A. Avramovitch, 20 Robie St., assoc. archt., CD 11/20/61.

Ont., Toronto—Timothy Eaton Memorial Church 23 St. Clair Ave. W., soon lets contract CHURCH ADDN., AUDITORIUM, OFFICES. $600,000. Plans deposit $50. Page & Steele, 72 St. Clair Ave. W., archts. A. Goldes & Assocs., Ltd., 3089 Bathurst St., engrs.

HEAVY CONSTRUCTION—LB & CA

▲ **Leo Contracting Co., Ltd.**, 120 Overbrooke Place, Toronto, Ont., LB **$1,052,203**, ROAD WIDENING, Bayview Ave. and Lawrence Ave. E. (R-42-61), TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. BA 12/5/61. CD 12/28/61.

▲ **Associated Standard Wire & Cable Ltd.**, 70 Wingold Ave., Toronto, Ont., LB **$1,108,372**, supply 483 mi. CONDUCTOR, (A-140) Montreal, QUEBEC. Quebec Hydro-Electric Comn., 107 Craig St. W., Montreal, Que. CD 10/21/55.

LaVille de Port Alfred, Village Hall, Port Alfred, Que., Owner Builds, **$695,000**, ROADWORK, PORT ALFRED, QUE. Emile Lemarre, 140 St. Dominique St., Jonquiere, Que., engr.

BUILDINGS—LB & CA

▲ **Burns & Dutton Concrete & Constr. Co., Ltd.**, 5720 4th St. SE, Calgary, Alta., CA Est. **$1,500,000,** reinforcing steel PLANT, OFFICE 11th St. and 34th Ave., CALGARY, ALTA. Martin Paper Products Ltd., c/o Waisman, Ross, McMillan & Assocs., archts., 105 4820 Macleod Trail, Calgary, Alta.

▲ **Pigott Constr. Co., Ltd.**, 36 James St. S., Hamilton, Ont., LB **$1,437,000,** 1 and 2 story, poured concrete, concrete frame, precast exposed aggregate panels, brick, air conditioned COMPOSITE SCHOOL, PORT DOVER, ONT. Simcoe Dist. High School Bd., Port Dover, Ont. BA 12/6/61. CD 11/20/61.

▲ **Bennett-Pratt Ltd.**, 5 Maple Leaf Dr., Weston, Ont., LB **$1,434,011**, 3 story Western Technical Commercial SCHOOL, ADDN., CLASSROOM ALTERATIONS, in old wing, 12 Evelyn Crescent, TORONTO, ONT. Bd. Educ., 155 College St., Toronto, Ont. BA 12/4/61. CD 11/20/61

The Mitchell Constr. Co., (Canada) Box 160, Brampton, Ont., LB **$719,882**, 3 story, 127 x 145 ft., concrete, steel Eastdale VOCATIONAL SCHOOL, TORONTO, ONT. Bd. Educ., 155 College St., Toronto, Ont. BA 12/1/61. CD 11/15/61.

▲ **Omega Constr. Cie, Ltee**, 6555 Cote des Neiges Rd., Montreal, Que., LB **$1,268,000**, (9 bidders), 2 story, brick, rein.-con. air conditioned ARTS and Trades SCHOOL, Main Rd., ASBESTOS, QUE., Provinicial Dpt. Youth, Dpt. P. Wks., Parliament Bldgs., Quebec City, Que. BA 12/5/61. CD 11/14/61.

▲ **Albert Deschamps Ltee**, 6931 Cote des Neiges Rd., Montreal, Que., CA **$1,597,000**, NORMAN SCHOOL, 1301 Sherbrooke St. E., MONTREAL, QUE. Provincial Dpt. Educ., Parliament Bldgs., Quebec City, Que. BA 10/17/61. CD 10/24/61, under LB.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ **Atlantic Gulf & Pacific Co.**, 15 Park Row, New York 38, N. Y., U.S.A., CA **$1,400,000**, DREDGING INDUSTRIAL HARBOR, Barcadera, near Pakietenbos, south coast ARUBA, NETHERLAND WEST INDIES. P. Wks. Dpt., Orangestad, Aruba, Netherland West Indies. BA 8/3. CD 6/22/61.

Royal Netherlands Harbor Works Co. Ltd., Amsterdam, Netherlands, CA Est. **$4,500,000**, DOCK FACILITIES, Barcadera Harbor (Aruba, Netherland West Indies).

FOREIGN

HEAVY CONSTRUCTION—BA

Iraq, Kubaisa—BA 4/11—Secretary of Purchasing & Tendernig Comn., Ministry of Municipalities, Baghdad, WATER SUPPLY SYS., incl. PUMPHOUSE. Plans deposit $28.

Iraq, Baquba—BA 4/29—Secretary of Purchasing & Tendering Comn., Ministry of Municipalities, Baghdad, WATER SUPPLY SYS., incl. PUMPHOUSE. Plans deposit $140.

BUILDINGS—LB & CA

▲ **Tersons Ltd.**, 4 Dollis Park, London N 3, England, CA Est. **$14,000,000**, 12 story HOTEL, SHOP, RESTAURANT and CAR PARK, LONDON, ENGLAND. City Centre Properties (I.T.C. Pensions), Ltd., 32 Victoria St., London SW 1, England. R. Seifert & Partners, 34 Red Lion Square, London WC 1, England, archts. W. V. Zinn, Collingham House, Eagle St., London WC 1, England, engr. CA 12/2.

For additional reports see CONSTRUCTION DAILY REPORTS SECTION

PROPOSED PROJECTS

WATER SUPPLY

▲ **Ark., Lowell**—Beaver Water Dist., c/o Clayton Little, Bentonville, WATER TREATMENT FACILITIES, for Fayetteville, Rogers, Springdale and Bentonville from Beaver Reservoir. **$2,700,000**. L. M. McGoodwin, 1146 Mission Blvd., Fayetteville, consult. engrs.

▲ **Mo., St. Charles**—City, City Hall, voted **$1,250,000** bonds Nov. 28, First Phase WW SYS. IMPRVS., incl. well water supply, water treatment plant and distr. lines extension and imprvs. Black & Veatch, 1500 Meadow Lake Parkway and P.O. Box 8405, Kansas City, Mo., consult. engrs. Bids early 1962. CD 10/18/61.

▲ **Tex., Dallas**—City, Dpt. P. Wks., City Hall, bond election Jan. 16, WATERWORKS. **$6,600,000**. CD 9/4/56.

SEWERS, WASTE DISPOSAL

▲ **Mo., St. Charles**—City, City Hall, voted $1,500,000 bonds Nov. 28, SEWERAGE SYS. IMPRVS., incl. Cole Creek SANITARY SEWER, **$450,000**; OUTFALL SEWER and SEWAGE TREATMENT PLANT, **$1,050,000**. Maran-Phillips & Assocs., 2210 West Clay St., consult. engrs. Bids early 1962. CD 10/18/61.

Neb., Scottsbluff—City, City Hall, SEWAGE DISPOSAL PLANT, AUXILIARIES, APPURTENANCE, etc. **$890,841**. Henningson, Durham & Richardson, Inc., 3555 Farnam St., Omaha, Zone 31, consult. engr.

▲ **N. H., Rochester**—City, City Hall, 27,000 sq. ft. INTERCEPTOR LINES, PUMPING STATION, TREATMENT PLANT for sewage. **$2,425,000**. Constr. Summer 1963. CD 4/5/46.

N. H., Salem—Town, Town Hall, SEWERAGE SYSTEM, and SEWAGE TREATMENT FACILITIES. **$898,000**. Constr. September 1962.

N. J., Union City—Weehawken-Union City Trunk Sewer Bd., City Hall, Union City, Weehawken-Union City TRUNK LINE SEWERS to tie-in to Hoboken municipal plant. **$800,000**. McClave & McClave, 600 Gorge Rd., Cliffside Park, consult. engrs.

▲ **Tex., Dallas**—City, Dpt. P. Wks., City Hall, bond election Jan. 16, SANITARY SEWERS. **$10,800,000**; STORM SEWERS, **$2,800,000**. CD 12/5/58.

BRIDGES

▲ **Tenn., Nashville**—City, City Hall, Woodland Street BRIDGE. Over **$1,000,000**. L. O. Hopkins & Son, 1710 Hayes St., consult. engrs. CD 6/1/61.

▲ **Tex., Dallas**—City, Dpt. P. Wks., City Hall bond election Jan. 16, BRIDGES. **$1,000,000**. CD 12/5/58.

Wash., Newport—Bd. Comrs. Pend Oreille Co., Courthouse, plans by Harry R. Powell & Assocs., Smith Tower, Seattle, HIGHWAY BRIDGE, near Usk. **$890,000**. Carter J. Carlsen, Newport, engr. CD 11/17/61.

STREETS AND ROADS

▲ **Tenn., East Ridge (Br. Chattanooga)**—City of East Ridge, City Hall, STREETS and ROADS IMPRVS., DRAINAGE. **$1,372,710**. Betts Engineering Co., 514 Lookout, Chattanooga, consult. engr.

▲ **Tex., Dallas**—City, Dpt. P. Wks., City Hall, bond election Jan. 16, STREET IMPRVS., PAVING. **$24,400,000**. CD 12/5/58.

WASHINGTON—State Hy. Comn., Transportation Bldg., Olympia, ROADS,

Benton Co.—relocation Primary State Hy. 8, Kennewich to Plymouth, **$1,400,000**,

25 mi. highway from Kennewick to Hanford, **$1,135,000**. Constr. 1963.

EARTHWORK, WATERWAYS

▲ **British Columbia**—British Columbia Electric Co., Ltd 970 Burrard St., Vancouver, three 2,500 ft. long 50 ft. diam. cement lined MAIN DIVERSION TUNNELS on Peace River, near Hudson Hope, in connection with Hydro-Electric Project, **$20,000,000-$30,000,000**. International Power & Engineering Consultants Ltd., 570 Dunsmuir St., Vancouver, consult. engrs. Bids soon. CD 10/17/57.

▲ **Ontario**—Grand River Conservation Comn., Galt, DAM, West Montrose, **$7,000,000**; DAM, near Ayr, **$3,000,000**.

UNCLASSIFIED

▲ **Illinois and Indiana**—American Electric Power Co., Inc., 2 Broadway, New York 8, N. Y., 32 mi. 345,000 volt TRANSMISSION LINE from Substation near Sidney, Champaign Co., Ill. to Substation near Cayuga, Vermillion Co., Ind. **$4,000,000**.

▲ **Illinois**—Natural Gas Storage Co., of Illinois, Herscher, GAS WELLS for injection and observation

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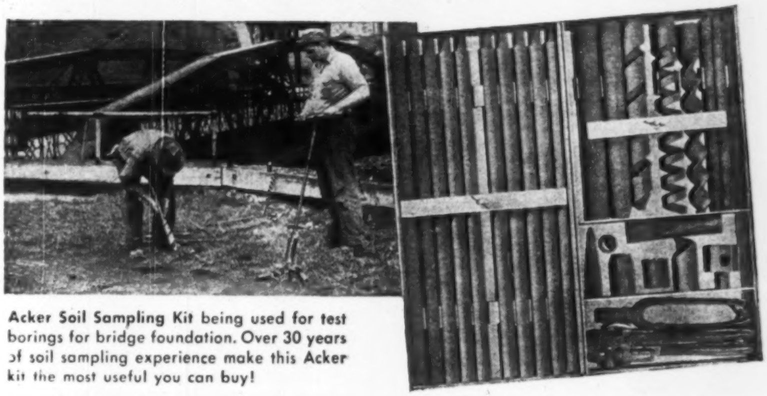
With accurate sub-soil information, *you avoid* costly trouble later on. And, what better way to get this information than with a portable, easy to use Acker Soil Sampling Kit. For here is a versatile collection of twelve soil sampling tools packed in a handy steel kit that can be carried in any car. Write today for prices and Bulletin **26ENR**.



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CIRCLE 183 ON READER SERVICE CARD

of gas and 6,500 hp. of compressor facilities, Herscher. **$3,300,000.** BA 1962.

▲ **Pa., Phila.**—Dpt. Procurement, City Hall Annex, East Central INCINERATOR-SERVICE BLDG., STORAGE BLDG., at PIERS 31, 32, 33, 34, 35. **$3,000,000.** Day & Zimmerman, Inc., 1700 Sansom St., consult. engr. Bids early 1962. CD 11/10/61.

▲ **South Dakota**—Butte Elec. Coop., Newell, SYSTEM IMPRVS., 137 mi. TRANS. LINE, **$574,400**; TRANS. FACILITIES, **$280,000**; PLANT IMPRVT., **$214,000.** Est. $1,069,000. Bids Spring 1962. CD 7/16/53.

▲ **Tex., Dallas**—City, Dpt. P. Wks., City Hall, bond election Jan. 16, PARKS. **$2,300,000.** CD 12/5/58.

▲ **Utah, Orem**—Sharon Co-operative Educational and Recreational Assn., plans by Fred L. Markham, 440 N. 5 West, Provo, SWIMMING POOL, US 91. **$1,000,000.** CD 9/23/58.

PUBLIC BUILDINGS

▲ **Ark., Fayetteville**—University of Arkansas, Fayetteville, DORMITORY for 400 men, **$1,500,000**; 100 HOUSING UNITS for married students, **$1,000,000**; DORMITORY for 400 women, **$1,500,000.** CD 3/30/56.

▲ **Ark., Searcy**—White County, Courthouse, defeated bonds Nov. 28, 90 to 100 bed HOSPITAL. **$1,800,000.** CD 10/27/61.

▲ **Calif., Santa Rosa**—Santa Rosa City High School Dist., P.O. Box 404, plans by J. Clarence Felciano, P.O. Box 424, Santa Rosa HIGH SCHOOL ADDNS., REHAB. **$2,500,000.** Graham & Hayes, 171 Second St., San Francisco, consult. engrs. CD 5/25/61.

▲ **Conn., Montville**—Town, Town Hall, plans by J. Gerald Phelan, 299 Washington Ave., Bridgeport, 1 story, JUNIOR-SENIOR HIGH SCHOOL, Colchester Rd., **$2,000,000.** Fletcher Thompson, Inc., 299 Washington Ave., Bridgeport, consult. engr. CD 12/16/60.

Del., Dover—Dover Housing Auth., Dover, plans by Victorine & Samuel Homsey, 917 Tilpin Ave., Wilmington, 70 units HOUSING, **$950,000.** Bids early 1962.

▲ **Idaho, Moscow**—University of Idaho, plans by Kelley & Finch, 2504 Kootenai St., Boise, SCIENCE BLDG., **$2,100,000 (Correction**-archt.), CD 12/5/61; plans by Wayland, Cline & Small, Idaho Bldg., Boise, ENLARGING HEATING PLANT, **$787,000.** CD 12/2/60

▲ **Idaho, Pocatello**—State Dpt. P. Wks., State Bldg., Boise, SCIENCE BLDG., Idaho State College, **$1,200,000.** Constr. 1962.

▲ **Iowa, Newton**—Community School Dist. Bd. Educ., plans by Tom Atherton, 201 Masonic Temple, Des Moines, B. C. Berg ELEMENTARY and HIGH SCHOOL, northern section of city, WASHINGTON ELEMENTARY SCHOOL ADDN., Kellogg JUNIOR HIGH SCHOOL, **$1,650,000.** CD 11/16/61.

▲ **La., Natchitoches**—State Bond & Bldg. Comn., Capitol Bldg., Baton Rouge, plans by Butler & Dobson, Box 71, 81,562 sq. ft. HEALTH & PHYSICAL EDUCATION BLDG., incl. walkways, Northwestern State College. **$1,200,000.**

▲ **Mich., Southfield**—Southfield Bd. Educ., 24675 Lahser Rd., voted bonds Nov. 27, JUNIOR HIGH SCHOOL; two ELEMENTARY SCHOOLS; five ELEMENTARY SCHOOL ADDNS., one HIGH SCHOOL ADDN. **$7,200,000.** CD 10/25/61.

Miss., State College—State Bond & Bldg. Comn., Woolfolk State Office Bldg., Jackson, plans by B. A. England Jr., Corinth, 300-bed women's DORMITORY, University of Mississippi. **$900,000.** Bids 1962. CD 8/26/60.

▲ **Mo., Champ St. (St. Louis 24 P.O.)**—Village of Champ, c/o 8801 Bangert Pl., voted $3,250,000 bonds Nov. 29, 1 story 300,000 sq. ft. INDUSTRIAL PLANT. **$3,000,000.** R. C. Can Co., 9430 Page Ave., Overland 14, Mo., lessee. Bids early 1962. CD 11/9/61.

▲ **Mo., St. Louis County**—Lindbergh School Dist. R-8, Bd. Educ., 4900 S. Lindbergh Blvd., St. Louis, Zone 26, **$2,500,000** bond election Jan. 27, JUNIOR HIGH SCHOOL near Robyn and Eddie and Park Rds. Bids early 1962. CD 7/13/60.

▲ **N.H., Concord**—City, Housing Auth., City Hall, plans by Dirsa & Lampron, 814 Elm St., Manchester, and Clifford Broker Assoc. assoc. archts., 123 North State St., 100 units, HOUSING FOR THE AGED. **$1,200,000.** Bids Spring 1962.

▲ **N. J., Allendale—Regional High School** Dist. for Allendale, Saddle River and Upper Saddle River-Brookside Ave., defeated referendum bonds and project Nov. 28, HIGH SCHOOL. **$3,000,000.** CD 9/28/61.

▲ **N. J., Camden** — Rutgers University, Room 101, Queens Bldg., New Brunswick, plans by Esbach & Pullinger, 28 West State St., Trenton, Phase 1, COLLEGE CENTER. **$1,250,000.** John W. Furlow, Inc., 4 and Chestnut Sts., Phila., Pa., mech. engr. Stevens & Bruder, 1519 Walnut St., Phila., Pa., struc. engrs. CD 5/30/60.

▲ **N. J., Cliffside Park**—Bd. Educ. Borough of Palisades Park, High School Bldg., plans by Tito DiVincenzo, 136 East 57th St., New York, N. Y., HIGH SCHOOL ADDN. **1,000,000.** CD 12/10/59.

▲ **N. J., Garfield**—Bd. Educ., Cedar St., $1,125,000 referendum Jan. 16, 2 story, 47,000 sq. ft. HIGH SCHOOL ADDN., Palisades Ave. and Outwater Lane. Approx. **$1,000,000.** Colabella & Passafaro, 31 River Rd., North Arlington, archts. CD 9/12/61.

▲ **N. J., Hackensack**—Bd. Freeholders Bergen Co., Admin. Bldg., plans by Charles S. Cleveland, 214 Main St., CIVIL DEFENSE TRAINING and OPERATING CENTER, Camp Gaw Rd., Mahwah. **$2,000,000.** Melvin W. Gelber, 21 Mercer St., mech. engr. Schwartz & Senes, 40 Grand St., Englewood, struc. engrs. CD 10/9/61.

▲ **N. J., Oakland**—Ramapo Regional Bd. Educ., George St., Franklin Lakes, voted referendum Nov. 28, REGIONAL HIGH SCHOOL, Oakland. **$2,865,000.** Sherwood Mills & Smith, 65 Broad St., Stamford, Conn., archts. Abrams & Moses, 2 Hamilton Ave., New Rochelle, N. Y., consult. engrs. CD 10/11/61.

▲ **N. J., Point Pleasant**—Bd. Educ., Ocean Rd. Point, plans by Boyken & Moss, 90 Bayard St., New Brunswick, JUNIOR-SENIOR HIGH SCHOOL. **$1,800,000.** Morrison, Zimmer & Borton, 2165 Morris Ave., Union, mech. engr. Severud-Elsatd-Krueger Assocs., 415 Lexington Ave., New York 17, N. Y., struc. engrs. Edwin Jones, 85 Tuttle Rd., Watchung, elec. engr. Bids soon. CD 7/18/61.

▲ **N. J., Woodbridge**—Bd. Educ. Twp. Woodridge, Barron Ave., voted $4,500,000 referendum Dec. 5, SENIOR HIGH SCHOOL, **$3,000,000,** Wiedersum Assoc., 65 Roosevelt Ave., Valley Stream, N. Y., archts.; HIGH SCHOOL ADDN., **$500,000,** Merchant Seidel & Hickey, 1 Elm Row, New Brunswick, archts. CD 10/19/61.

▲ **N.Y., Brooklyn**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-967 MODERNIZATION Samuel J. Tilden HIGH SCHOOL, 5800 Tilden Ave. **$1,250,000.** Constr. after 1962.

▲ **N. Y., Brooklyn**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-942, PUBLIC SCHOOL 316, vic St. Marks and Classon Aves. **$2,500,000.** Constr. after 1962.

▲ **N. Y., Brooklyn**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-467, PUBLIC SCHOOL 308, vic. Eastern Parkway and Herkimer St. **$2,500,000.** Constr. after 1962.

▲ **N. Y., Brooklyn**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-941, PUBLIC SCHOOL 313, vic. Blake and Tedford Aves. **$1,800,000.** Constr. after 1962.

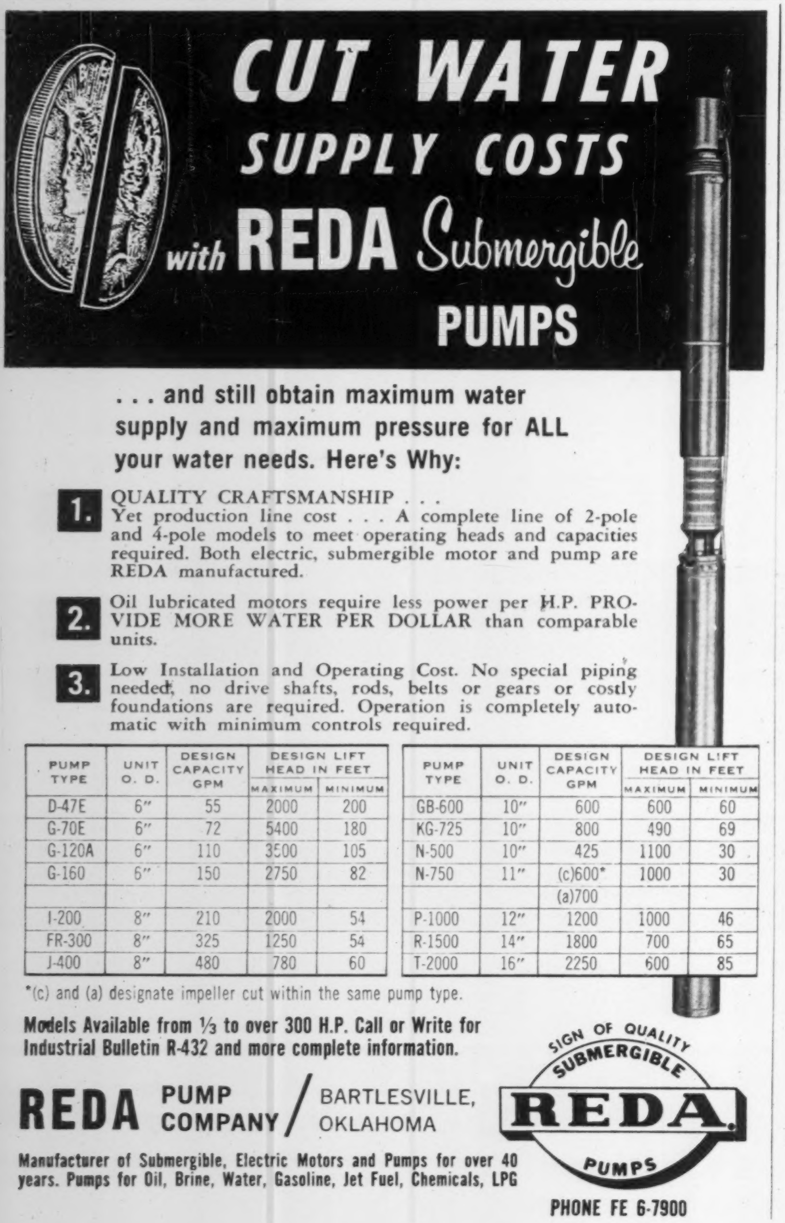
▲ **N. Y., Brooklyn**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-565, PUBLIC SCHOOL 315, vic. Manhattan and Metropolitan Aves. **$2,500,000.** Constr. after 1962.

▲ **N. Y., Brooklyn**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-935, Boys HIGH SCHOOL ADDN., Marcy and Putnam Aves., Madison St. **$6,500,000.** Constr. after 1962.

▲ **N. Y., Brooklyn**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-943, JUNIOR HIGH SCHOOL 317, Kings Bay Area. **$3,600,000.** Constr. after 1962.

▲ **N. Y., Brooklyn**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-607, PUBLIC SCHOOL 134, vic. 14 Ave. and 42 St. **$2,500,000.** Constr. after 1962.

▲ **N. Y., Brooklyn**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-136, PUBLIC SCHOOL 137, vic. Belmont and Sackman Aves. **$2,500,000.** Constr. after 1962.



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PUMP TYPE	UNIT O. D.	DESIGN CAPACITY GPM	DESIGN LIFT HEAD IN FEET	
			MAXIMUM	MINIMUM
D-47E	6″	55	2000	200
G-70E	6″	72	5400	180
G-120A	6″	110	3500	105
G-160	6″	150	2750	82
I-200	8″	210	2000	54
FR-300	8″	325	1250	54
J-400	8″	480	780	60

PUMP TYPE	UNIT O. D.	DESIGN CAPACITY GPM	DESIGN LIFT HEAD IN FEET	
			MAXIMUM	MINIMUM
GB-600	10″	600	600	60
KG-725	10″	800	490	69
N-500	10″	425	1100	30
N-750	11″	(c)600*	1000	30
		(a)700		
P-1000	12″	1200	1000	46
R-1500	14″	1800	700	65
T-2000	16″	2250	600	85

*(c) and (a) designate impeller cut within the same pump type.

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▲ **N. Y., Brooklyn**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-90, PUBLIC SCHOOL 245, vic. Sutter Ave. and Grafton St. **$2,500,000.** Constr. after 1962.

▲ **N. Y., Brooklyn**—Bureau Constr. Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-619, PUBLIC SCHOOL 264, vic. Belmont and Ashford Sts. **$2,500,000.** Constr. after 1962.

▲ **N. Y., Brooklyn**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-636, PUBLIC SCHOOL 266, Pitkin Ave. and Crescent St. **$2,500,000.** Constr. after 1962.

▲ **N. Y., Brooklyn**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-938, PUBLIC SCHOOL 267, vic. Benson and 17 Aves. **$2,200,000.** Constr. after 1962.

▲ **N. Y., Brooklyn**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-928, PUBLIC SCHOOL 283, vic. E. 40 St. and Ave. J. **$2,500,000.** Constr. after 1962.

▲ **N. Y., Brooklyn**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-637, PUBLIC SCHOOL 295, vic. E. 12 St. and Ave. T. **$2,500,000.** Constr. after 1962.

▲ **N. Y., Brooklyn**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-940, PUBLIC SCHOOL 300, vic. Ft. Hamilton Parkway and 51 St. **$1,800,000.** Constr. after 1962.

▲ **N. Y., Brooklyn**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-470, PUBLIC SCHOOL 306, vic. Dumont and Williams Aves. **$2,500,000.** Constr. after 1962.

▲ **N. Y., Brooklyn**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-494, PUBLIC SCHOOL 109, vic. White and Sigel Sts. **$2,500,000.** Constr. after 1962.

▲ **N. Y., Brooklyn**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-609, Eastern District HIGH SCHOOL ADDN., Marcy Ave., Keap and Rodney Sts. **$6,500,000.** Constr. after 1962. CD 11/15/54.

▲ **N.Y., Flushing**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-961, conversion Newton Farm Annex into K-6 SCHOOL, 6601 Main St., Queens Boro. **$1,000,000.** Constr. after 1962.

▲ **N.Y., Jamaica**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-591, JUNIOR HIGH SCHOOL 72, New York Blvd. and 130 Ave., Queens Boro. **$3,500,000.** Constr. after 1962.

▲ **N.Y., Jamaica**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-569 PUBLIC SCHOOL 30, Baisley Blvd. and 166 St. Queens Boro. **$2,400,000.** Constr. after 1962.

▲ **N. Y., New York**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-960, JUNIOR HIGH SCHOOL 118, Arthur Ave. and 179 St., Bronx Boro. **$1,300,000.** Constr. after 1962.

▲ **N.Y., New York**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-966, MODERNIZATION George Washington HIGH SCHOOL, 192 St. and Audubon Ave. **$1,250,000.** Constr. after 1962.

▲ **N.Y., New York**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-963, PUBLIC SCHOOL 24 ADDN., 660 W. 236 St., Bronx Boro. **$1,300,000.** Constr. after 1962.

▲ **N. Y., New York**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-945, PUBLIC SCHOOL 195, vic. 1 Ave. and E. 3 St., Manhattan Boro. **$2,500,000.** Constr. after 1962.

▲ **N. Y., New York**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-523, PUBLIC SCHOOL 182, Cooper Sq. Area, Manhattan Boro. **$2,500,000.** Constr. after 1962.

▲ **N. Y., New York**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-946, PUBLIC SCHOOL 196, vic. 3 Ave. and E. 104 St., Manhattan Boro. **$2,500,000.** Constr. after 1962.

▲ **N. Y., New York**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-910, PUBLIC SCHOOL 178, vic. Lewis St. and E. Houston St., Manhattan Boro. **$2,500,000.** Constr. after 1962.

▲ **N. Y., New York**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj E-936, JUNIOR HIGH SCHOOL 144, vic. Gun Hill and Boston Rds., Bronx Boro. **$3,600,000.** Constr. after 1962.

▲ **N. Y., New York**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-598, PUBLIC SCHOOL 74, vic. Tremont and Anthony Aves., Bronx Boro. **$2,500,000.** Constr. after 1962.

▲ **N. Y., New York**—Bureau Constr., Bd Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-234, PUBLIC SCHOOL 25, vic. Ridge and Rivington Sts., Manhattan Boro. **$2,500,000.** Constr. after 1962.

▲ **N. Y., Tottenville**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, Proj. E-612, PUBLIC SCHOOL 6, Tottenville Area, Richmond Boro. **$1,800,000.** Constr. after 1962.

▲ **N.C., Greensboro**—City, City Hall, plans by Loewenstein Atkinson Assocs., 1030 E. Wendover Ave., Greensboro, and J. Russell Bailey, 224 Dabney St., Orange, Va., MAIN LIBRARY. **$1,500,000.** Watson Engineers, 1102 E. Bessemer Ave., mechanical engrs. CD 1/23/61.

▲ **O., Columbus**—Dpt. P. Wks., State Depts. Bldg., Zone 15, Dpt. Hys. ADMINISTRATION BLDG., Front St. **$5,100,000.** Bids late summer 1962. CD 9/26/58.

▲ **O., Columbus**—State Dpt. P. Wks., State Depts. Bldg., Zone 15, BUREAU of UNEMPLOYMENT COMPENSATION BLDG., Front St. **$5,100,000.** BA May 1962.

Pa., Johnsville—Centennial Joint School Dist., plans by Haag & D'Entremont, 400 Cedar St., Jenkintown,

(Continued on page 188)

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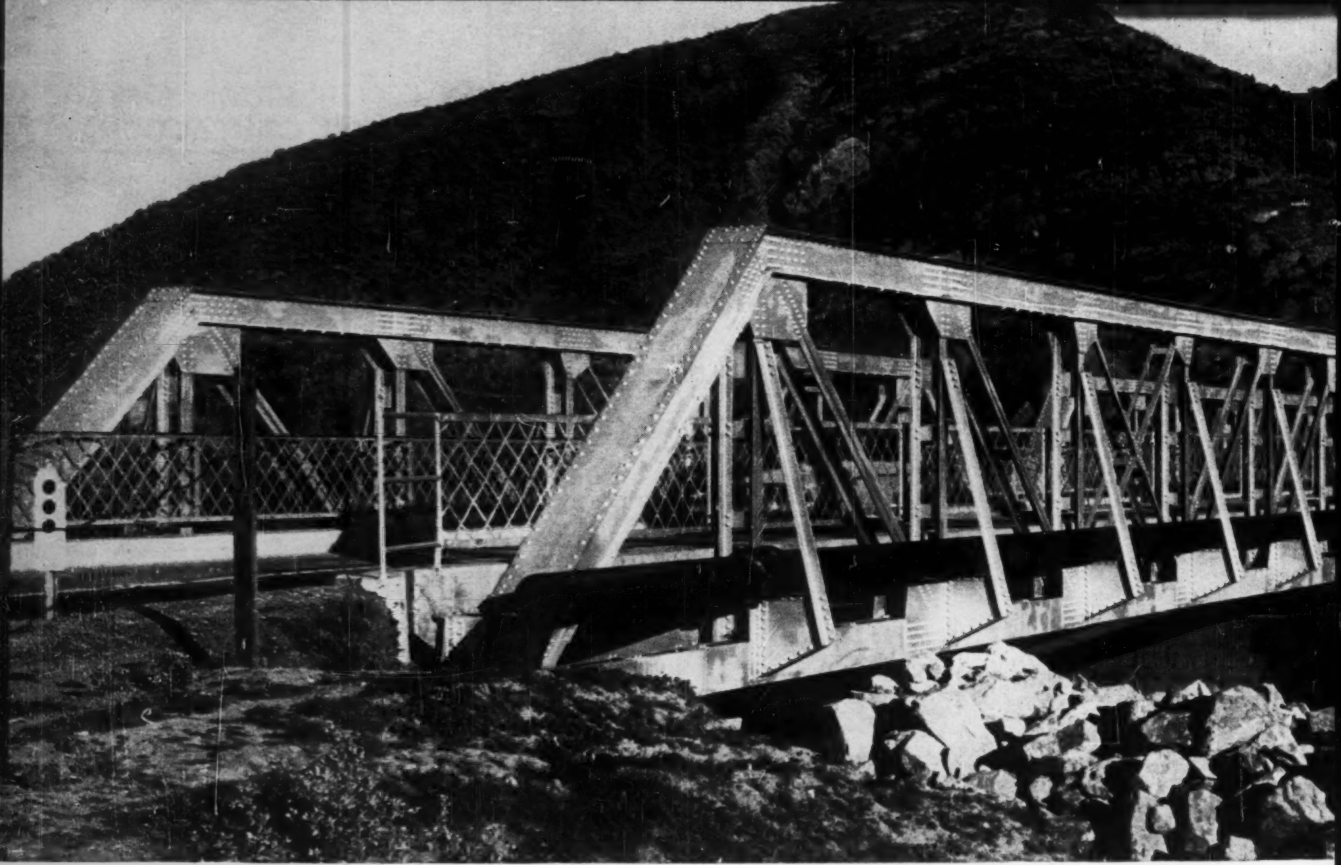


Three-quarters of the "Old Town" Bridge is shown in use at its new site over Calleguas Creek, Ventura County.

How to make two new bridges from

But don't try it unless you've got a steel bridge to start with.

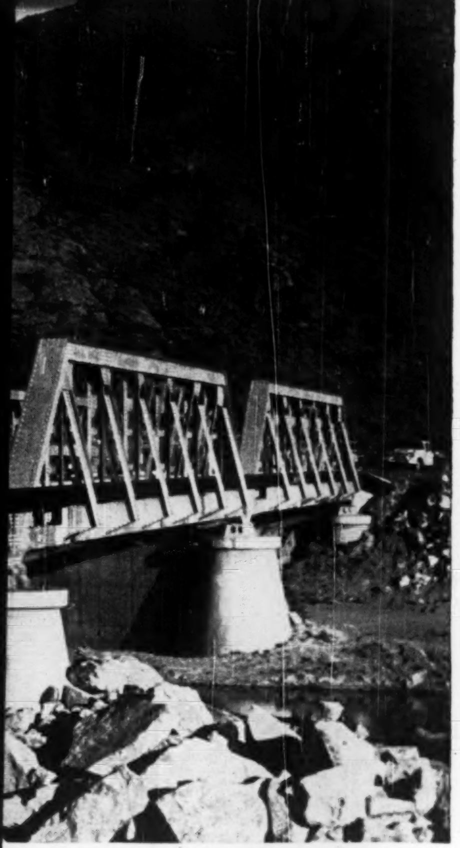
When boom years came to San Diego and its suburbs, traffic zoomed. The "Old Town" Bridge you see at lower left was forced into retirement by the new four-lane, freeway-type steel bridge directly behind it.

So they sold the 35-year-old bridge

Even though it was 35 years old, the "Old Town" Bridge *still* met the specifications of the county and state bridge engineering codes for width, strength, and load-bearing capacity! So the city of San Diego sold it to Macco Construction

◀ *After serving San Diego well for 35 years, the "Old Town" Bridge was dismantled . . . but not discarded. Within two months it became the two bridges you see above. (Bethlehem Steel fabricated and erected all the steel for all the bridges you see in these photos.)*

CIRCLE 186 ON READER SERVICE CARD



One-quarter of the "Old Town" Bridge now crosses a creek bed in Foster Park, Ventura County, California.

one old one . . . and save $30,000!

Company, who dismantled the bridge and, in turn, sold it to the Bailey Bridge Equipment Company of San Luis Obispo. This company then sold the bridge to Ventura County highway authorities to build *two* urgently needed bridges.

They trucked bridge trusses 200 miles

The 8 dismantled bridge trusses were trucked 200 miles northward. One truck was needed for each of the 18-ton, 104-foot-long trusses; two other trucks hauled the steel floor sections of the bridge.

The whole job took just 2 months

In Ventura County, three spans of the old four-span bridge were erected to span Calleguas Creek. The fourth span was erected to span Coyote Creek. One bridge was now two bridges! And the whole operation—from beginning of dismantling to finish of re-erection—had taken only two months!

SAVED $30,000

According to highway officials of Ventura County, the bridges are as good as new ones . . . and they cost $30,000 less than the estimated cost of building new bridges.

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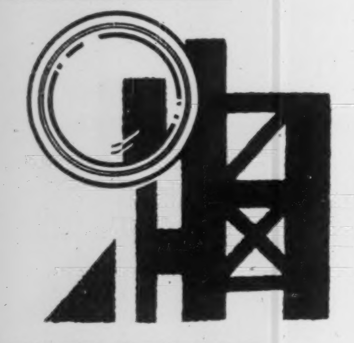
DOWN TO FUNDAMENTALS



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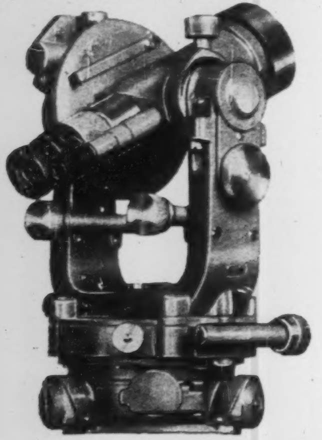

(Continued from page 185)

Eugene Klinger Junior HIGH SCHOOL, Southhampton, Over **$750,000.** Bids early 1962. CD 11/28/60.

▲ **S. C., Columbia** — University of South Carolina, SCHOOL OF JOURNALISM; SCHOOL OF NURSING; DORMITORY ADDNS., general CLASSROOM ADDN., and SCHOOL OF LAW ADDN., **$3,780,000;** STUDENT UNION BLDG. ADDN., **$1,200,000;** PHYSICAL EDUCATION BLDG., **$800,000.** Bids soon. CD 9/21/60.

▲ **Tex., Abilene**—General Services Admin., 1114 Commerce St., Dallas, plans by Boone & Pope, 262 Legett Drive, POST OFFICE ADDN., REMODELING, **$1,252,150.** Tippett & Gee, 1333 N. 2nd St., consult. engrs. CD 2/10/61.

▲ **Wis., Dodgeville**—Bd. Educ. Joint School Dist. No. 1, Dodgeville, plans by John J. Flad & Assocs., 2525 University Ave., Madison, HIGH SCHOOL. **$1,400,000.**

▲ **Wis., Madison**—Bd. Regents, University of Wisconsin, Madison, ENGINEERING BLDG. ADDN., **$2,900,000;** ART EDUCATION BLDG., **$3,000,000;** two CHEMISTRY UNITS, **$5,500,000;** CLASSROOM BLDG., **$2,700,000;** MUSIC HALL, **$2,500,000;** plans by John J. Flad & Assocs., 2525 University Ave., EDUCATION BLDG., **$4,000,000.**

▲ **Wis., Menomonie**—Bd. Regents of State Colleges, Madison, plans by Dobberman & Helske, 1507 Tower Ave., Superior, PHYSICAL EDUCATION BLDG. **$1,200,000.** CD 5/22/58.

▲ **Wis., Milwaukee**—Bd. Regents, University of Wisconsin, Madison, SCIENCE BLDG. ADDN., **$3,000,000;** GYMNASIUM, **$2,800,000;** CLASSROOM and LABORATORY, **$3,400,000;** LIBRARY, **$2,500,000.**

▲ **Wis., Superior**—Bd. Educ., Superior, plans by Dobberman & Helske, 214 Bd. of Trade Bldg., Superior, and Hammel & Green, Inc., 2650 University Ave., St. Paul, Minn., HIGH SCHOOL. **$3,450,000.** CD 6/6/61.

▲ **Wis., Union Grove**—State Dpt. P. Welfare, Madison, plans by Mark Pfaller & Assoc., 7613 W. State, Milwaukee, INFIRMARY and RECEIVING BLDG., Southern Colony and Training School. **$1,500,000.** Bids about January 1963. CD 7/19/54.

▲ **Alta., Edmonton**—Alberta Govt., Parliament Bldgs., Edmonton, 6 story, steel, masonry ADVANCED STUDIES LIBRARY, University of Alberta. **$5,000,000.** BA early 1962.

▲ **B.C., Vancouver**—School Dist. No. 39, 1595 W. 10th Ave. plans by A. B. Wilson, 1595 W. 10th Ave., rein.-con. SECONDARY SCHOOL, Haro and Denmans St. **$1,250,000.** BA mid-February 1962. CD 12/18/53.

▲ **B.C., Vancouver**—School Dist. No. 39, 1595 W. 10th Ave., plans by A. B. Wilson, 1595 W. 10th Ave., TEMPLETON JUNIOR HIGH SCHOOL ADDN., 727 Templeton Dr. **$1,000,000.** Bids mid-February, 1962. CD 9/22/60.

▲ **B. C., Vancouver**—University of British Columbia, Campus, Vancouver, plans by Thompson, Berwick & Pratt, 1553 Robson St., CLINICAL RESEARCH CENTRE, incl. 410 bed hospital, 310 acute beds, 60-bed psychiatric unit, 40 bed chronic care unit, **$15,000,000,** Constr. 1964; rein.-con. MEDICAL LIBRARY, **$500,000,** Constr. 1962.

▲ **Ont., Clinton**—Clinton Dist. Collegiate Institute Bd. plans by Page & Steele, 72 St. Clair Ave. W., Toronto, COLLEGIATE ADDN. **$1,000,000.** Bids soon.

▲ **Ont., Hamilton**—City, City Hall, PUBLIC HOUSING, Wellington St., CNR Railway Line and Harbor. **$2,000,000.** CD 4/10/51.

▲ **Ont., Kenora**—Kenora High School Bd., Kenora, plans by Smith, Carter, Searle Assocs., 1190 Waverly St., Winnipeg, Man., VOCATIONAL SCHOOL. **$1,000,000.** BA early 1962.

Ont., Renfrew—Renfrew Collegiate Institute, 194 Bonnechere St.; plans by Craig, Madill, Abram & Ingleson, 75 Albert St., Ottawa, COLLEGIATE EXTENSION. **$955,820.**

▲ **Ont., Ridgeville**—Pelham Bd. Educ., Ridgeville, plans by A. B. Scott Assocs., 65 Empire St., Welland, TECHNICAL HIGH SCHOOL, Hy. 20, overlooking Ridgeville. **$1,500,000.**

▲ **Ont., Toronto**—City, City Hall, 5 story, brick TRAINING SCHOOL for FIREMEN, Eastern Ave. **$1,750,000.** J. Sutherland, c/o owner, ch. archt.

Ont., Toronto—Dpt. P. Wks., Sir Charles Tupper Bldg., Riverside Dr., Ottawa, plans by Page & Steele, 72 St. Clair Ave. W., 6 story, steel frame, rein.-con., brick UNEMPLOYMENT INSURANCE COMN. BLDG., Jarvis and Dundas Sts., **$900,000.** Morrison, Hershfield, Millman & Huggins, Ltd., 96 Bloor St. W., consult. engrs. BA early 1962. CD 3/3/61.

▲ **Ont., Toronto**—University of Toronto, Simcoe Hall, plans by Mathers & Haldenby, 15 St. Mary St., 3 story LIBRARY, north campus, University College (climate-controlled) **$1,000,000.** CD 1/4/61.

▲ **Que., Thetford Mines**—College Classique de Thetford Mines plans by J. Berchmans Gagnon, 97 S. Notre Dame St., 2 story, 80x150 ft., and 3 story, 60x280 ft. CLASSICAL COLLEGE EXTENSION. **$1,500,000.**

COMMERCIAL BUILDINGS

▲ **Ark., Hot Springs**—Riviera Corporation, 219 S. Patterson St., plans by T. Ewing Shelton, First National Bank Bldg., Fayetteville, Hot Springs Riviera LUXURY RESORT, incl. 106 motor lodge units, 400-seat convention hall, 500-seat theater-restaurant, five swimming pools, located on 14 acres near U.S. 70, east of here. **$2,500,000.** Bids January 1962.

▲ **Calif., Los Angeles**—California Federal Savings & Loan Assoc., 5680 Wilshire Blvd., plans by Charles Luckman Assocs., 9220 Sunset Blvd., 28 story OFFICE, 5680 Wilshire Blvd. **$17,000,000.** Bids 1962.

▲ **Colo., Glenwood Springs**—Eastwood, Inc., Box 57, plans by Nationwide Downtowner Motor Inns, Inc., 22 South 2nd, Memphis, Tenn., 100 unit MOTOR HOTEL, on Hy. 6 and 40, incl. swimming pool, restaurant. Approx. **$2,000,000.**

▲ **Fla., Miami**—Florida Power & Light Co., Ingraham Bldg., plans by Weed-Johnson Assocs., 550 Brickell Ave., 4 story; 150,000 sq. ft. OFFICE. **$2,500,000.** H. J. Ross & Assocs., 1735 Biscayne Blvd., struc. engr. Weeks Eng. Co., 1753 SW 3rd Ave., and R. L. Duffer & Assocs., 3356 Virginia St., mech. engrs. CD 6/22/61.

▲ **Ind., Indianapolis** — Christian Theological Seminary, Box 88012, Zone 8, plans by Edward L. Barnes, 23 E. 67th St., New York 21, N. Y., Christian THEOLOGICAL SEMINARY, 36 acre site, 42 St. between Haughey Ave. and Hy. 421, adjacent to Butler University Campus. **$5,000,000.** CD 5/2/58.

▲ **Iowa, Des Moines**—Grand Lodge of Masons, 708 5th Ave. N., Humbolt, plans by Wetherell-Harrison-Wagner, 500 Hubbell Bldg., 100 unit RETIREMENT HOME for Masons and wives or widows. **$1,500,000.**

▲ **Iowa, Marshalltown**—Evangelical Hospital, plans by Hewitt & Royer, 607 Westport Rd., Kansas City, Mo., HOSPITAL, incl. MAIN HOSPITAL WING, NURSING HOME, Main St. and 3rd Ave. **$1,650,000.** CD 11/13/61.

▲ **La., New Orleans**—Starwood Corp. and United Improvement & Investing Corp., 521 Royal St., plans by Curtis & Davis, 2475 Canal St., one 7 story, three 3 story 310 unit APARTMENT, clubhouse, swimming pool, Bayou St. John. **$2,500,000.** Bids January-February 1962.

▲ **Mich., Warren**—Kogan Realty Co. & Sears Roebuck Co., 19901 Jas. Couzens Hy., Detroit, 2 story SHOPPING CENTER, 5,000 car-parking, Dequindere and 12 Mile Rds. **$10,000,000.** Constr. 1962.

▲ **Minn., Burnsville (Minneapolis P.O.)**—L. M. Loken & O. M. Spande, 9110 Lyndale Ave. So., Minneapolis, River Ridge SHOPPING CENTER, MOTEL, RESTAURANT, COMMERCIAL SHOPS, Interstate Freeway 35W and Minnesota Hy. 13. **$2,000,000.** Midwest Planning & Research, Inc., Metropolitan Bldg., Minneapolis, consult. engr.

▲ **Minn., Maplewood (P.O. St. Paul)**—J. Jordan, Sr. (corp. head), 2472 Upper Afton Rd., St. Paul, 200 unit MOTEL and SUPPER CLUB, Upper Afton Rd. and McKnight Rd. **$1,000,000.** Bids 1962.

▲ **Miss., Pascagoula** — International Brotherhood of Boilermakers, Local 693, Pascagoula, plans by H. C. Malchow & Assocs., 1309-A 26 Ave., Gulfport, 192 units (3 bldgs.), RETIREMENT HOME, Chico Rd., 34 acre site. **$2,000,000.** Bids early 1962.

▲ **Mo., Clayton (St. Louis 5 P.O.)**—Bernard Land Corp., 111 S. Meramec Ave., Zone 5, plans by Bernard F. McMahon, 111 S. Meramec Ave., Clayton 5, Mo., 8 story CLAYTON INN ADDN., 7750 Carondelet Ave. Over **$1,000,000.** Bids early January 1962. Clayton Inn, Inc., lessee.

▲ **Mo., Des Peres (St. Louis 31 P.O.)**—S. G. Duke, c/o Duke-Young, Inc., 9650 Clayton Rd., St. Louis, Zone 24, preliminary plans by Study, Farrar & Majers, Arcade Bldg., 812 Olive St., St. Louis, Zone 1, 2 story, bsmnt., 125,000 sq. ft. Westward Ho COMMERCIAL BLDG., incl. department store and various shops, stores, parking areas, etc., Manchester and Harwood Rds. **$1,250,000.** Bids early 1962. CD 11/30/61.

▲ **N. J., Elizabeth**—Alvin Feldman & Milton Stein, 61 Crestmont Rd., West Orange, plans by Harold Kent, 1755 Manor Dr., Irvington, 205 unit APARTMENT, Morris Ave. **$3,000,000.**

▲ **N. J., Newark**—Chock Full O'Nuts Corp., 425 Lexington Ave., New York, N. Y., plans by Horace Ginsbern & Assoc., 205 East 42nd St., New York, N. Y., OFFICE, Broad and Commerce Sts. **$2,000,000.** Wald & Zigas, 10 East 39th St., New York 16, N. Y., mech. engrs. Weinberger, Frieman, Leichtmann & Quinn, 20 Vesey St., New York 7, N. Y., struc. engrs. CD 8/21/61.

▲ **N. J., Newark**—United States Realty Corp., 972 Broad St., plans by Wm. E. Legman, 972 Broad St., 22 story APARTMENT, Broad and Hill Sts., **$7,000,000.** Wiener & Thaler, 24 Commerce St., struc. engrs. Visco Franzblau Assocs., 114 Liberty St., New York 6, N. Y., mech. engrs. CD 5/8/59.

▲ **N. J., Roseland**—Lock Joint Pipe Co., 150 Rutledge Ave., East Orange, plans by Voorhees, Walker, Smith, Smith & Haines, 101 Park Ave., New York, N. Y., EXECUTIVE OFFICES, Laurel Ave. **$3,000,000.**

▲ **N. J., South Orange**—Newark Academy, 215 First St., Newark, plans by Eggers & Higgins, 100 East 42 St., New York 17, N. Y., NEWARK ACADEMY PRIVATE SCHOOL, 65 acre site. **$2,700,000.** Cosentini Assocs., 10 Columbus Circle, New York 19, N. Y., mech. engrs. DiStasio & Van Buren, 4 Albany St., New York 6, N. Y., struc. engrs. Joseph Gangemi, 468 Park Ave., New York 16, N. Y., landscape archt.

▲ **N. J., Totowa**—Fidelity Syndications, Inc., c/o Julius Stein Esq., 24 Commerce St., Newark, plans by Harold Glucksman, 850 Broad St., Newark, 150,000 sq. ft. STORE, Furler St. and Minniskin Rd. **$1,200,000.** Topps of Totowa, Inc., subsidiary of Interstate Dept. Stores, 111 8th Ave., New York, N. Y., lessee. James Rothstein, 3288 Blvd., Jersey City, struc. engr. CD 11/27/61.

▲ **N. J., West Long Branch**—Monmouth College, Cedar Ave., plans by LaPierre & Litchfield, 175 Market St., Paterson, three DORMITORIES and DINING HALL, Cedar Ave. west of Brookville Ave. **$2,800,000.**

▲ **N. Y., Binghamton**—Bldg. Comn. Diocese of Syracuse, 240 Onandaga St., Syracuse, plans by Charles Saldun, 151 Riverside Dr., 2 story HIGH SCHOOL, COMBINATION GYMNASIUM and AUDITORIUM, 1 story ADMINISTRATION AREA, 2 story CONVENT and

CHAPEL, bounded by Seminary and Laurel Aves., Chestnut and College Sts. $1,500,000. CD 11/30/61.

▲ **N. Y., Binghamton**—Galesi Bros., c/o Eugene C. Gerhart, Marine Midland Bldg., SHOPPING CENTER, 28 acre site, Stow Flats Section. **$1,500,000.**

▲ **N. Y., Brooklyn**—P. W. Baths, Inc., 115 E. 86 St., New York, Zone 28, plans by Oscar I. Silverstone, 37 W. 57 St., New York, Zone 19, 16 story APARTMENT, 40 Brighton 1 Rd. northwest corner Boardwalk. **$2,240,000.**

▲ **N. Y., Brooklyn**—P. W. Baths, Inc., 115 E. 86 St., New York, Zone 28, plans by Oscar I. Silverstone, 37 W. 57 St., New York, Zone 19, 16 story APARTMENT, 50 Brighton 1 Rd. northwest corner Boardwalk. **$2,912,000.**

▲ **N. Y., Brooklyn**—Frank DeDomenico, 2135 Mill Ave., Zone 34, plans by Joseph S. Riggio, 120-44 Queens Blvd., Kew Gardens, 6 story APARTMENT, 8700 25 Ave. **$1,040,000.**

N. Y., **Buffalo**—Carlton Development Co., c/o Edward Hengerer, 97 Linden Ave., plans by Justin Imbs, 225 Delaware Ave., 3 story 220-bed NURSING HOME, 751-73 Ellicott St. **$800,000.** CD 8/3/61.

▲ **N. Y., Flushing**—Salvation Army, 120 W. 14 St., New York, Zone 11, plans by Kelly & Gruzen, 10 Columbus Circle, New York, Zone 19, Williams Memorial RESIDENCE for the AGED, Booth Memorial Hospital. **$2,000,000.** Kallen & Lemelson, 1860 Broadway, New York, Zone 23, mech. engrs. Lev Zetlin, 114 E. 32 St., New York, Zone 16, struct. engr. CD 9/12/61.

▲ **N. Y., New York**—Jane Chanes, 25 Willoughby St., Brooklyn, Zone 1, plans by Robert L. Bien, 342 Madison Ave., Zone 17, 21 story, 235x253 ft. OFFICE, GARAGE and STORES, Fulton, Washington, Vesey and West Sts. **$8,000,000.**

▲ **N. Y., New York**—Chas. M. Chuckrow, Inc., 101 Park Ave., Zone 17, 21 story APARTMENT, bounded by Irwin and Waldo Aves., W. 238 and W. 240 Sts., Bronx Boro. **$1,500,000.**

▲ **N. Y., New York**—Lenox Hill Hospital, E. 77 St. and Park Ave., Zone 21, plans by Rogers & Butler, 219 E. 44 St., Zone 17, 12 story COMMUNITY HEALTH CENTER, 112 E. 77 St. **$3,500,000.**

▲ **N. Y., New York**—Pierrepont Assocs., Inc., 405 Lexington Ave., Zone 17, 22 story OFFICE, 471-477 Park Ave. So., southeast corner E. 32 St. **$3,000,000.**

▲ **N. Y., New York**—Isaac Prussin, 511 5 Ave., New York, Zone 17, plans by Leo Stillman, 332 E. 149 St., New York, Zone 51, APARTMENT and GARAGE, 51 E. 87 St. **$2,500,000.**

▲ **N. Y., Roosevelt**—Roosevelt Field, Inc., c/o Webb & Knapp, Inc., 383 Madison Ave., New York, Zone 17, plans by Skidmore Owings & Merrill, 25 W. 44 St., New York, Zone 36, 1 story ADDN. 100,000 sq. ft. on top of 3 story Macy's DEPARTMENT STORE, Roosevelt Field. **$2,000,000.** Syska & Hennessey, Inc., 144 E. 39 St., New York, Zone 16, mech. engr. Severud-Elstad-Krueger Assocs., 415 Lexington Ave., New York, Zone 17, struc. engrs. CD 11/13/61.

▲ **Pa., Camp Hill**—National Land & Investment Co., Park Towne Place, Phila., Garden APARTMENTS, Sweetbriar Place Apartments, 30 bldgs. with 11 apartments each on Trindle Rd., **$3,500,000.**

Pa., Immaculata — Immaculata College plans by Dagit Associates, 1700 Race St., Phila., SCIENCE and ARTS BLDG. Over **$750,000.** Bids early 1962.

▲ **Tex., Dallas**—Exchange Park Exchange, c/o Exchange Bank Bldg., plans by Welton Becket & Associates, archts., engrs., 802 Lovett Blvd., Houston, OFFICE NO. 5, with enclosed PARKING GARAGE, in 140 acre Exchange Park, **$7,500,000;** SHOPPING UNITS, paved parking area, **$4,000,000;** 2,000 APARTMENT UNITS, with enclosed PARKING GARAGE. **$12,000,000.** CD 7/13/55.

Tex., Dallas—Hampton & Ledbetter, Inc., Jas B. Biddle & Paul Crum, Kirby Bldg., plans by John Wesley Jones, 3815 Herrling St., 65 DWELLINGS, 45 acre tract, Hampton and Ledbetter Sts., area in Oak Cliff. **$815,000.** CD 11/2/61.

▲ **Tex., Rockport**—Carl Krueger Jr. & Associates, 526 Milam Bldg., San Antonio, 500 DWELLINGS, **$4,750,000;** MOTEL, **$440,000;** MARINA, **$110,000;** CLUBHOUSE, GOLF COURSE, **$400,000;** WATER SYSTEM, **$70,000;** DRAINAGE, **$75,000,** Frandeleg Island, near here.

▲ **Wis., Appleton**—Appleton State Bank, 221 West College Ave., plans by Wm. J. Cann & Bank Bldg. and Equipment Corp., 1130 Hampton, St. Louis, Mo., 48,884 sq. ft. BANK. Over **$1,000,000.**

▲ **Wis., Milwaukee**—Menomonee Parkway Village, Inc., 231 West Wisconsin Ave., plans by Donald Gutzmann, 1744 North Farrell Ave., APARTMENT HOUSE PROJECT. **$2,700,000.** CD 11/6/58.

N. S., **Berwick**—Western Kings Memorial Hospital Bd., Cambridge, plans by Associated Hospital Consultants, Moncton, HOSPITAL. **$812,000.**

▲ **Que., Shawinigan**—Seminaire of Ste. Marie de Shawinigan, c/o Arthur Lacoursiere, archt., 279 4th St. SEMINAIRE EXTENSION. **$1,000,000.** CD 5/15/61.

INDUSTRIAL BUILDINGS

▲ **Calif., Arcadia**—United Electrodynamics, Inc., 200 Allendale Rd., Pasadena, RESEARCH and DEVELOPMENT PLANT, near Michelinda Blvd. **$2,000,000.**

▲ **Calif., Redwood City**—Ampex Corp., 934 Charter St., 125,000 sq. ft. INDUSTRIAL PLANT. **$5,000,000.**

▲ **Neb., Lincoln**—Grainger Bros. Co., 737 P St., plans by Martin-Money & Assocs., 503 Karbach Block, Omaha, 200,000 sq. ft. GROCERY WAREHOUSE, railroad sidings, for 13 cars and covered loading

(Continued on page 192)

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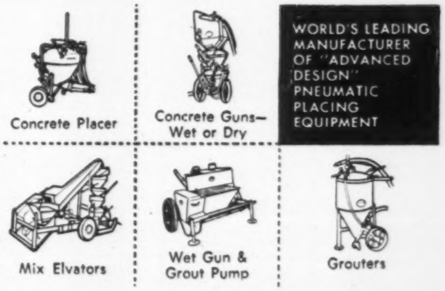

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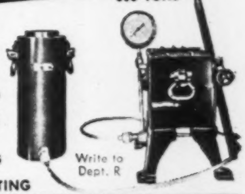

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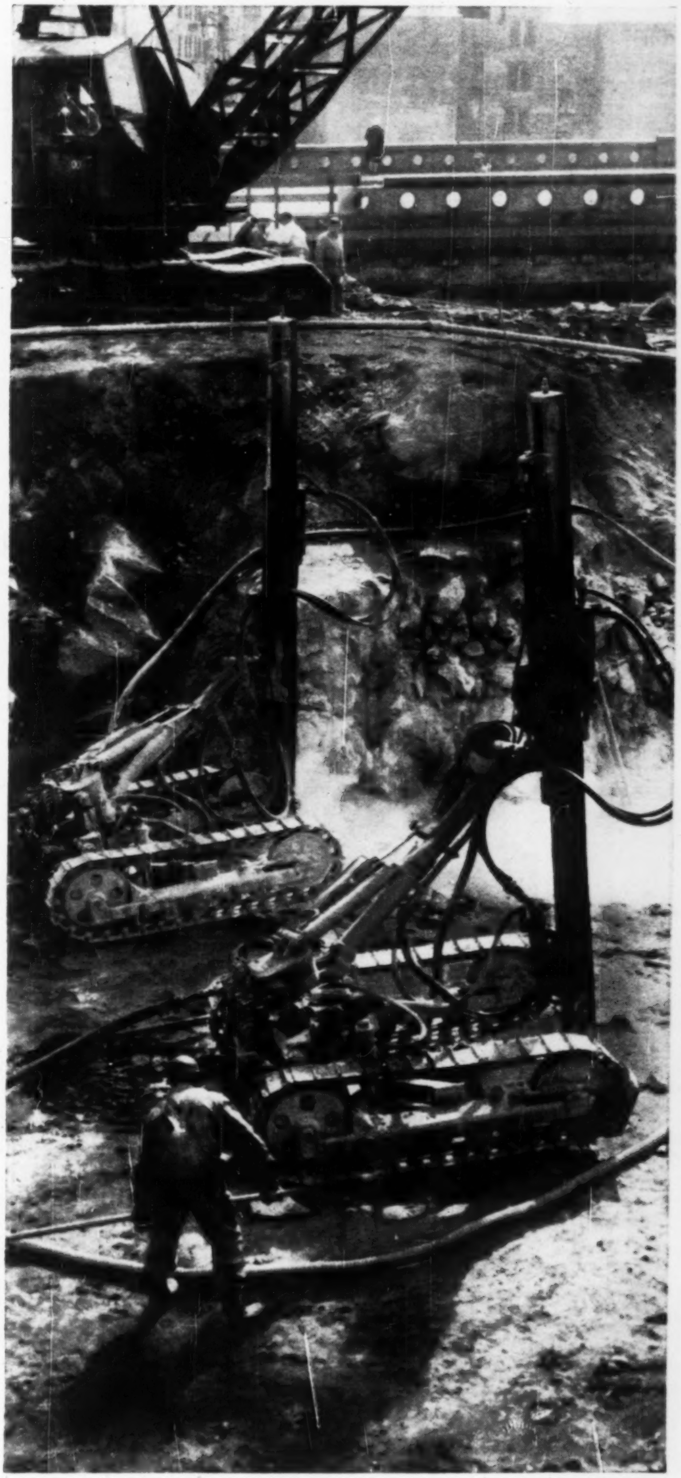

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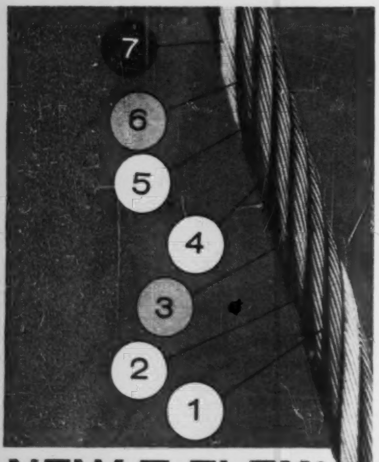

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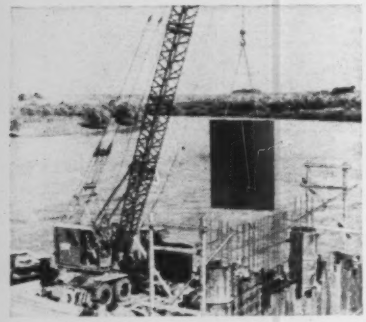

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(Continued from page 189)

docks for 25 trucks, parking, etc., at Hy. 77 and Pioneer Blvd. **$1,000,000.**

▲ **N. J., Matawan**—American-Wheaton Glass Corp., (Sub. American Can Co.), Rte. 18, East Brunswick, 324,000 sq. ft. GLASS CONTAINER PLANT, 10,000 sq. ft. OFFICE HEADQUARTERS, two RAILROAD SPURS from Jersey Central and Pennsylvania RR's between Jersey Turnpike and Cliffwood Rd.

▲ **N. D., Drayton**—Red River Valley Sugar Co., Drayton, SUGAR BEET FACTORY, near here. Vitro Engineering Co., 261 Madison Ave., New York 16, N. Y., consult. engr.

▲ **O., Marion**—Fulfillment Corp., Marion, 100,000 sq. ft. PLANT for handling mailing operations. **$1,000,000.**

▲ **Okla., Anadarko-Anadarko Industries, Inc.**, plans by Hudgins, Thompson, Ball & Assocs., 1411 Classen Blvd., Oklahoma City, COLD STORAGE PLANT. **$2,250,000.** CD 8/24/61.

▲ **Pa., Oil City**—Columbia Corrugated Container Corp., 300 Michael Drive, Syosset, N. Y., corrugated box FACTORY. **$3,000,000.**

▲ **Wis., Superior**—Central Co-operative Wholesale, 1901 Winter St., plans by Ballinger-Meserole Co., 1625 Race, Phila., Pa. 1 story DISTR. BLDG., WAREHOUSE. **$1,000,000-$1,500,000.** Melander-Fugelso Assocs., 603 Alworth Bldg., Duluth, Minn., engrs. **(Correction**—project description). CD 11/30/61.

PUERTO RICO

▲ **Puerto Rico**—P. Wks. Dpt., Ponce de Leon Stop 23, Santurce, ROADS,

Caguas—asphalt paving 1.06 mi. Proj. U1-1 21&22. **$1,500,000.**

Ensenada-Lajas—asphalt paving 6.35 mi. Proj. S(116)4, **$1,000,000.**

Juana Diaz-Villalba — asphalt paving 2.35 mi. Proj. S 149(1).

▲ **Puerto Rico, Rio Piedras**—Puerto Rico Dpt. Health, San Juan, SERVICE and SUPPLY BLDG. Puerto Rico Medical Center, **$1,200,000;** 304-bed INDUSTRIAL HOSPITAL, **$2,400,000;** 600-bed MUNICIPAL HOSPITAL, **$3,700,000;** 200-bed rein.-con. INCURABLE DISEASE HOSPITAL, **$1,000,000.**

AMERICANS ABROAD

▲ **India, New Delhi**—IBM World Trade Corp., 821 United Nations Plaza, New York 17, N. Y., U.S.A., PLANT to mfg. punched card equipment, near here. Over **$1,000,000.**

▲ **Spain, Somorrostro-Dow-Unquinesa**, subsidiary Dow Chemical Corp., 1000 Main St., Midland, Mich. U.S.A., PETROCHEMICAL PLANT. Over **$5,000,000.**

▲ **Taiwan**—Atlas Powder Co., Concord Pike and New Murphy Rd., Wilmington 99, Del., U.S.A., INDUSTRIAL DYNAMITE FACTORY, southern Taiwan. **$1,200,000.**

U.S. POSSESSIONS

▲† **Canal Zone**—U. S. Eng., 575 Riverside Ave., Jacksonville, Fla., U.S.A., plans by Joseph H. Bryson, 111 W. Adams St., Jacksonville, Fla., U.S.A., 200-units CAPEHART HOUSING and OFF-SITE FACILITIES, Atlantic Side, Fort Gulick and Fort Davis. **$3,300,000.** CD 12/6/61.

LATIN AMERICA

▲ **Argentina**—Aluminum Ltd., Sun Life Bldg., 1155 Metcalfe St., Montreal, Que., Canada, ALUMINUM FOIL and SHEET FABRICATING PLANT ADDNS., MODERNIZATION, El Palomar; SHEET ROLLING PLANT, Zarate. Total cost **$11,000,000.**

▲ **Argentina, Barrancas**—Kaiser Aluminum & Chemical Corp., Kaiser Center, 300 Lakeside Dr., Oakland, Calif., U.S.A., minimum capacity 20,000 metric tons/yr. ALUMINUM REDUCTION FACILITY, near here. **$28,500,000.**

▲ **Brazil, Rio de Janeiro**—Superintendency of Urbanization & Sanitation, State of Guanabara, Rio de Janeiro, 0.43 mi. Section II, TRAFFIC TUNNEL, double lane, linking southern and northern residential areas. **$5,300,000.** Bids August 1962.

▲ **Brazil, Salvador**—Superintendencia de Agua e Esgotos do Reconcavo, Salvador, imprvs. WATER SUPPLY SYS., incl. intake conduit to treatment and pumping plant, pumping lines, distribution networks and meter installations (1st Stage). **$8,000,000.**

FOREIGN

▲ **Eire, Avoca**—Irish Industrial Development Auth., 14 St. Stephens Green, Dublin, FERTILIZER PLANT, near here to be operated by Nitrogen Eireann Teoranta. **$17,000,000-$22,000,000.**

▲ **India, Varanasi**—Railway Bd., Rawalpindi, India, DIESEL LOCOMOTIVE PLANT. **$26,200,000.**

▲ **Malaya, Kuala Lumpur**—Director of Civil Aviation, Govt. of Federation of Malaya, Kuala Lumpur, INTERNATIONAL AIRPORT, incl. 12,000 ft. RUNWAY, 17,000 ft. TAXIWAYS, 40,000 ft. ROADS, 880,000 sq. ft. PARKING APRONS. Over **$5,000,000.** Bids February 1962.

▲ **Nepal**—Govt. of Nepal, Patan, Nepal, ROAD from Kathmandu to Tibetan Border. **$9,800,000.** Constr. 1962-1966.

▲ **Nigeria, Port Harcourt**—Alcan Aluminum of Nigeria Ltd., Port Harcourt, ALUMINUM ROLLING MILL. **$4,500,000.**

For additional reports see **CONSTRUCTION DAILY NEWSLETTER**

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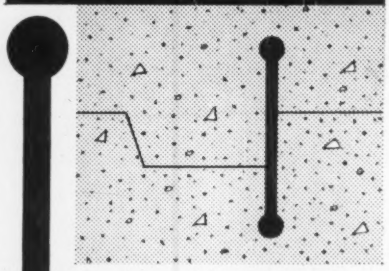

RUBBER or VINYL

Williams Efficiency Waterstops are made from Natural Rubber Stock, and designed for maximum effectiveness in any type of cast-in-place construction joint. They will bend around corners—will not crack or tear from shear action. Tensile Test: 3990 lbs.; Elongation Test: 650%. Available in rolls up to 80 feet in length. Field splicing is simple. Williams Waterstops can also be furnished in Vinyl or Neoprene for industrial uses where resistance to oil and other injurious wastes is desirable. These highly effective Waterstops are now in use in hundreds of industrial plants, commercial and public buildings throughout the country.

See Sweet's, or Write for Information.

WILLIAMS
EQUIPMENT and SUPPLY CO.
486 W. Eight Mile Rd., Hazel Park, Mich.
CIRCLE 52 ON READER SERVICE CARD

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IROQUOIS
ASPHALT
PLANTS

Complete batch type Asphalt plants with capacities from 50 to 240 tons per hour — hot-cold mix. New automated design enables complete plant to be operated by one man.

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POSEY IRON WORKS INC
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DIVISIONS:
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• Tunnel Forms • Industrial Heating • Foundry
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561 S. PRINCE STREET LANCASTER, PA.
CIRCLE 53 ON READER SERVICE CARD

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

December 27 Rhode Island

STREETS AND ROADS

December 27 Rhode Island December 28 New Hampshire
January 2 Connecticut

† **Mass., Weymouth**—BA 1/18—Dist. P. Wks. Office, 1ND, 495 Summer St., Boston, Zone 10, IMPRVT. RUNWAY END ZONE, Runway 17, U. S. Naval Air Station, South Weymouth, NBy 24915, Spec. No. 24915/59. $100,000-$250,000. Plans deposit $25.

Vt., Rutland—BA 1/25—City, City Hall, Contr. 1, SEWAGE TREATMENT PLANT. $650,000. Fenton G. Keyes & Assoc., 46 Aborn St., Providence, R. I., engrs. CD 9/19/60.

BUILDINGS—BA

Vt., Randolph—BA 12/28—State Vermont, Bldg., Div. State Administration Bldg., Montpelier, SCIENCE BLDG., Vermont Agricultural and Technical Institute, $465,000, Jennison Engineering, Inc., 95 College St., Burlington, engr., CD 6/22/61; LABORATORY, seven classroom bldg., Vermont Agricultural and Technical Institute, Approx. $400,000, Roland M. Whittier, 108 Shelburne St., Burlington, archt. for both projects. CD 2/10/61.

BUILDINGS—LB & CA

▲ **Morris & Son Constr. Co.**, 219 Central St., Lowell, Mass., CA **$1,224,600**, est. $1,225,000, JUNIOR HIGH SCHOOL, Main St., TEWKSBURY, MASS. Town, Junior High School Bldg. Comn., c/o Supt. Schools, Tewksbury, Mass. BA 11/6. CD 11/17/61, under LB.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

January 4 Maryland January 5 Pennsylvania

STREETS AND ROADS

January 4 Maryland January 5 Pennsylvania

N. Y., New York—BA 12/29—New York City Transit Auth., Rm. 1310, 370 Jay St. Brooklyn, Zone 1, furnishing, installing, rearranging LOW TENSION POWER DISTRIBUTION FACILITIES, 126 W. 53 St., Contr. P-204, Manhattan Boro. CD 8/31/54.

▲ **D. C., Wash.**—BA 1/5—D. C. Govt., 499 Pennsylvania Ave. N.W., Unit 11, Broad Run Segment of Potomac INTERCEPTOR SEWER, near Dulles International Airport, Loudon, Va. Plans deposit $50. CD 8/26/60.

▲† **Delaware**—BA On Or About 2/1—U. S. Eng., Custom House, 2nd and Chestnut Sts., Phila., Pa., CHANNEL RELOCATION and constr. RAILROAD BRIDGE STRUCTURE, Chesapeake and Delaware Canal about 3 mi. west of St. Georges, and 16 mi. southwest of Wilmington, (1) excavation 13,000,000 cu. yds. to provide stabilized canal banks for channel 450 ft. wide and 35 ft. deep, interim navigation channel 250 ft. wide, 27 ft. deep and 10,400 ft. long (2) canal bank drainage system consisting 6,200 lin. ft. of 12 in. to 36 in. clay pipe, 30,000 lin. ft. 6 in. perforated clay pipe (3) 39,000 tons stone riprap revetment, (4) rairoad bridge substructure, 340 tons steel sheet piling, 12,600 lin. ft. concrete filled steel pipe bearing piles, 46,000 lin. ft. steel pipe bearing piles 46,000 lin. ft. steel H bearing piles, 4,100 cu. yd. concrete for foundation seals, 9,600 cu. yd. concrete for piers and abutments, 400 tons reinforcing steel bars, 21,000 bbl. portland cement (5) 280 acres turfing, CIVENG-36-109-62-27B. CD 9/29/59, under Bridges.

BUILDINGS—BA

Md., Kensington—BA 1/4—Archdiocese of Washington, 1721 Rhode Island Ave. N.W., Wash., D. C., (selected list bidders), Holy Redeemer CHURCH, Saul Rd. and Sumit Ave. Johnson & Boutin, 1417 22 St. N.W., Wash., D. C., archts. CD 11/2/61.

▲ **N. J., Edison (Nixon P.O.)**—BA 1/15—Housing Auth., Twp. of Edison, 1036 Amboy Ave., Metuchen, HOUSING, 70 units in Bonhamtown and 30 units at North Edison Gardens $1,000,000. Ricker & Axt, 6115 Hudson Ave., West New York, archts. CD 3/17/60.

HEAVY CONSTRUCTION—LB & CA

CMH Co., Inc., 11 Tristan Lane, Williamsville, N. Y., LB **$177,426** (11 bidders), First section Transit Rd. WATER LINE, AMHERST, N. Y. Town, Town Hall, Amherst, N. Y. BA 12/4. CD 8/21/61.

Pamco Constr. Co., Inc., 403 Oakwood Rd., Huntington Station, N. Y., LB **$303,000** (12 bidders), Contr. 1 general constr. REFUSE INCINERATOR PLANT, GARDEN CITY, N. Y. Village of Garden City, Supt. P. Wks., Village Hall, 351 Stewart Ave., Garden City, N. Y. BA 12/11. CD 11/6/61.
W. J. Gaskill, Inc., 93 Court St., Brooklyn 1, N. Y., LB **$277,200** (6 bidders), Contr. 2, furnaces and equipment for REFUSE INCINERATOR PLANT (Garden City, N. Y.).

Ace Hoeffner Contg. Co., Inc., 410 Newbridge Ave., East Meadow, N. Y., LB **$144,828** (3 bidders), Contr. B-537-K, PAVING, RESURF. CONCRETE CURBS, SIDEWALKS and STORM WATER DRAINAGE 2,600 ft. Roslyn-Mineola Rd. from Jericho Turnpike to East Williston Rd., Incorp. Villages of Mineola and East Williston, Town of North Hempstead, MINEOLA, N. Y. Dpt. P. Wks. Nassau Co., Old County Court House, Franklin Ave., Mineola, N. Y. BA 12/6. CD 11/28/61.

▲ **Davis Constr. Corp.**, Charlotte Ave., Hicksville, N. Y., LB **$2,122,497** (3 bidders), IMPRVT. Roslyn-West Shore Dr., PAVING, CURBS, SIDEWALKS, STORM WATER DRAINAGE and OVERPASSES, Port Washington, Contr. B-567-P. MINEOLA, N. Y. Dpt. P. Wks. Nassau Co., Old County Court House, Franklin Ave., Mineola, N. Y. BA 12/12. CD 12/6/61.

▲† **The Forest Co.**, R.D. 1, Mechanicsburg, Pa., CA **$1,282,806**, ACCESS ROAD and TAXIWAY, IFB-NAFEC 62-24, ATLANTIC CITY, N. J. Federal Aviation Agency, Atlantic City, N. J. BA 10/18/61. CD 11/1/61, under LB.

C. J. Pardun & Sons, Inc., 880 Gorge Rd., North Brunswick, N. J., LB **$489,610** (8 bidders), Section T, SEWER LINE EXTENSIONS, TRENTON, N. J. Ewing-Lawrence Sewerage Auth., 600 Whitehead Rd., Trenton, N. J. BA 12/11/61. CD 11/24/61.
United Foundations Corp., 350 Princeton Rd., Union, N. J., LB **$217,129** (7 bidders), Section SS, SEWER LINE EXTENSIONS (Trenton, N. J.).

Eastern Asphalt Co., 2 Penn Center Plaza, Phila., Pa., LB **$174,978**, PAVING, Bid 3049, PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. BA 12/7/61. CD 11/20/61.

▲ **MARYLAND**—State Rds. Comn., 300 W. Preston St., Baltimore, Zone 2, Bids opened 12/12, ROAD,
Richard Kline, 14 Water St., Box 665, Frederick, Md., LB **$1,393,963** (5 bidders), grade, surf. 1.71 mi. Rte. 190 from Winston Dr. to Burdette Rd., incl. 1 box culvert and structural plate pipe arch, M-485-7-320, Montgomery Co. CD 11/22/61.

▲† **U S. Eng.**, 24 St. and Maryland Ave., Baltimore 18, Md., cancelled bids to have been opened Nov. 28, wid'n., deepen MAIN CHANNEL, Chesapeake Bay, CIVENG-18-020-62-7, MARYLAND. **$5,000,000.**

▲ **The Empire Constr. Co.**, 31 S. Calvert, Baltimore, Md., LB **$1,021,130** (6 bidders), Proj. MPA-E61-8, Phase III-B, TRACK WORK, PAVING, etc., Dundalk Marine Terminal, Dundalk, BALTIMORE, MD. Maryland Port Auth., Pier 2, Pratt St., Baltimore 2, Md. BA 12/12. CD 11/29/61.

F. O. Day Co., Rockville Pike, Rockville, Md., LB **$494,005** (3 bidders), Proj. 3273, REPAVING improved roadways and sidewalks for Year 1962, various locations, Montgomery and Prince Georges Counties, HYATTSVILLE, MD. Washington Suburban Sanitary Comn., Hamilton St., Hyattsville, Md. BA 12/11. CD 11/29/61.

John F. Casey, P.O. Box 1888, Pittsburgh, Pa., LB **$843,110** (5 bidders), Tenth Street Mall BRIDGE over Southwest Freeway Inner Loop, WASH., D. C. Redevelopment Land Agency, 919 18th St. N.W., Wash., D. C. BA 12/8/61. CD 11/15/61.

▲ **Charles F. Smith**, Walnut and Birch Sts., Kennett Sq., Pa., LB **$1,878,174** (9 bidders), Unit No. 9, The Nichols Segment and River Crossing of Potomac INTERCEPTOR SEWER, near Dranesville, Va., WASH., D. C. D. C. Govt., 499 Pennsylvania Ave. N.W., Wash., D. C. BA 12/18/61. CD 12/7/61.

▲ **Wright Contg. Co.**, Box 38, Odenton, Md., LB **$3,229,771** (8 bidders), GRADING Anacostia Freeway, WASH., D. C. D. C. Govt., 499 Pennsylvania Ave. N.W., Wash., D. C. BA 12/12/61. CD 12/1/61.

BUILDINGS—LB & CA

▲ **Terminal Constr. Corp.**, State Hy. 17 and Moonachie Ave., Wood Ridge, N. J., CA **$2,177,000**, fdns. and general contract Proj. NYS-95, GAYLORD WHITE HOUSES, southeast portion E. 105 St., 2 Ave., E. 104 St. and 3 Ave., Manhattan Boro, NEW YORK, N. Y. New York City Housing Auth., Rm. 1002, Purchase Div., 10 Floor, 299 Broadway, New York 7, N. Y. BA 10/24. CA 12/6. CD 10/26/61, under LB

Yolanda Sachs, 50-18 64 St., Woodside, N. Y., Owner Builds, **$627,000**, 3 story APARTMENT, 36-38 Ft. Charles Pl., 6 story APARTMENT, 15 Terrace View Ave., 6 story APARTMENT, 172 W. 228 St. and 3 story APARTMENT, 163 W. 228 St., NEW YORK, N. Y. Henry S. Dobiecki, 2000 Brentwood Rd., Brentwood, N. Y., archt.

David Weinblatt, 305 Asbury Ave., Asbury Park, N. J., CA Est. **$400,000**, 3 story, 40 unit MOTEL, Bergh St., ASBURY PARK, N. J. Metropolitan Motel, 305 Asbury Ave., Asbury Park, N. J. Benoist & Goldberg, 5 Valentine St., Monmouth Beach, N. J., archts. CD 5/17/61.

▲ **P. G. Constr. Co.**, 57 Prospect St., Demarest, N. J., and **Town House Bldrs.**, 34 Grout St., Dumont, N. J., Owner Builds, **$1,000,000**, 30 HOUSES, Donnybrook Dr., DEMAREST, N. J. Harsen & Johns, 60 Westervelt Ave., Tenafly, N. J., archts.

▲ **Andrew Haspel**, 114 Berkshire Dr., Berkeley Heights, N. J., Owner Builds, **$1,000,000**, 30 HOUSES, Berkshire Dr., Warren Twp., PLAINFIELD, N. J. Robert Baker, 219 Amboy Ave., Metuchen, N. J., archt.

▲ **Berned, Inc.**, 85 Central Ave., Clifton, N. J., Owner Builds, **$2,250,000**, 74 HOUSES, off Longport Rd., WAYNE, N. J. Rudolph Novak, 89 Central Ave., Clifton, N. J., archt. Canger Engineering, 6-20 Plaza Rd., Fair Lawn, N. J., engrs.

▲ **Rea Constr. Co.**, 136 Bradford Ave., Pittsburgh 6, Pa., CA **$1,340,200**, general contract HIGH SCHOOL for Center Twp. Sch. Bd., B9-697-1, ALIQUIPPA, PA. State Pub. School Bldg. Auth., 101 S. 25th St., Harrisburg, Pa. BA 11/2/61. CD 10/8/61, under LB.

▲ **John J. Driscoll & Co., Inc.**, 7610 Layton Dr., Springfield, Va., LB **$1,215,000** (8 bidders), Lexington Terrace ELEMENTARY SCHOOL, BALTIMORE, MD. City, Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore 2, Md. BA 12/13. CD 11/28/61.

▲ **Cladney Constr. Co., Inc.**, 635 F St. N.W., Wash., D. C., LB **$1,027,000** (6 bidders), OFFICE, 1428-30 K St. N.W., WASH., D. C. K St. Assocs., c/o Bernard Frishman, archt., 1420 K St. N.W., Wash., D. C. BA 12/12/61. CD 11/28/61.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

February 7 Virginia

STREETS AND ROADS

February 7 Virginia

† **Va., Roanoke**—BA 1/8—Federal Aviation Agency, Procurement Section, Room 349, Federal Bldg., New York International Airport, Jamaica, N. Y., AIRPORT SURVEILLANCE RADAR FACILITY, Woodrum Field, IFB 1-62-104B1.

† **Miss., Biloxi**—BA 1/16—U. S. Eng., P.O. Box 1169, Mobile, Ala., CHAPEL and ANNEX, Keesler Air Force Base, ENG-01-076-62-38B. $400,000. Plans deposit $4.20. CD 12/5/61.

Tenn., Lebanon—BA 1/18—City, City Hall, Contr. B. SEWAGE TREATMENT PLANT. Over $300,000. Plans deposit $60. Wiedeman & Singleton, P.O. Box 1878, Atlanta 1, Ga., engrs. CD 10/11/60.

BUILDINGS—BA

▲ **La., Lafayette**—BA 1/10—State Bd. Educ., State Capitol, Baton Rouge, Unit B & C, 7 story, 55,000 sq. ft. men's RESIDENCE HALL and 1 story 16,000 sq. ft. DINING FACILITIES, $1,300,000, plans deposit $100, John M. Lachin, Jr. & Assn., 4323 Bienville Ave., New Orleans, archts.; Unit A, 2 story, 63,000 sq. ft. women's DORMITORY, Southwestern University, $900,000, plans deposit $100, Theodore Perrier & Assn., 740 Poydras St., New Orleans, archts. CD 8/9/55.

Fla., Melbourne—BA 1/15—Brevard County Bd. Pub. Instruction, Melbourne, Merritt Island ELEMENTARY SCHOOL, Merritt Island. $500,000. Extended date. W. R. Gomon & Assocs., Box 1671, Daytona Beach, archts. CD 12/8/61.

BUILDINGS—SLC

Ky., Louisville—Ford Motor Co., The American Rd., Detroit, Mich., soon lets contract East and West WING ADDNS. to Assembly Plant, Fern Valley Rd. Over $750,000. Albert Kahn Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit 2, Mich., archt.-engr. George H. Miehls, 345 New Center Bldg., Detroit, Mich., engr. CD 12/13/61.

HEAVY CONSTRUCTION—LB & CA

Binnings Constr. Co., 400 Dakin St., New Orleans, La., LB **$174,603**, (4 bidders), Proj. S3A & S3C, two SEWAGE PUMPING STATIONS, BATON ROUGE, LA. City of Baton Rouge and East Baton Rouge Parish, Municipal Bldg., Baton Rouge, La.

Boh Bros. Constr. Co., Box 19144, New Orleans, La., LB **$252,227**, (6 bidders), Proj. 446-S, vitr. clay SEWERS, NEW ORLEANS; LA. Sewerage and Water Bd. of New Orleans, City Hall, New Orleans, La., CD 9/5/61;
Charles Orlando & Sons, 140 Orlando Dr., Metairie, La., LB **$247,031**, (6 bidders), Proj. 445-S, vitr. clay SEWERS (New Orleans, La.).

BUILDINGS—LB & CA

W. L. Hughes Constr. Co., Inc., 742 East 25th St., Norfolk, Va., CA **$478,000**, 2 story, 20 unit, 30,000 sq ft. frame, masonry Co-op APARTMENT, NORFOLK, VA. Granby Plaza Corp., 742 East 25th St., Norfolk, Va.

Bass Constr. Co., 708 Bainbridge, Richmond, Va., LB Est. **$150,000**, WAREHOUSE, RICHMOND, VA. Morton Klein & Julian Jacobs, 800 Forest Ave., Richmond, Va. Gresham & Shiflett, 605 West Cary, Richmond, Va., archts.

▲ **T. R. Humphrey** and **J. A. Crumpler**, P.O. Box 273, Elon College, Owner Builds, **$1,000,000**, 100 RESIDENCES, BURLINGTON, N. C.

Kavanaugh-Smith & Co., 114 N. Green St., Greensboro, N. C., Owner Builds, **$425,000**, 25 HOUSES, southern section, GREENSBORO, N. C.

N. C. Monroe Constr. Co., P.O. Box 359, Greensboro, N. C., CA Est. **$650,000**, general contract 130,000 sq. ft. WAREHOUSE, LABORATORY, OFFICE, HIGH POINT, N. C. Alderman Studios, Inc., 320 N. Hamilton St., High Point, N. C. BA 11/28/61. CD 12/13/61, under LB.

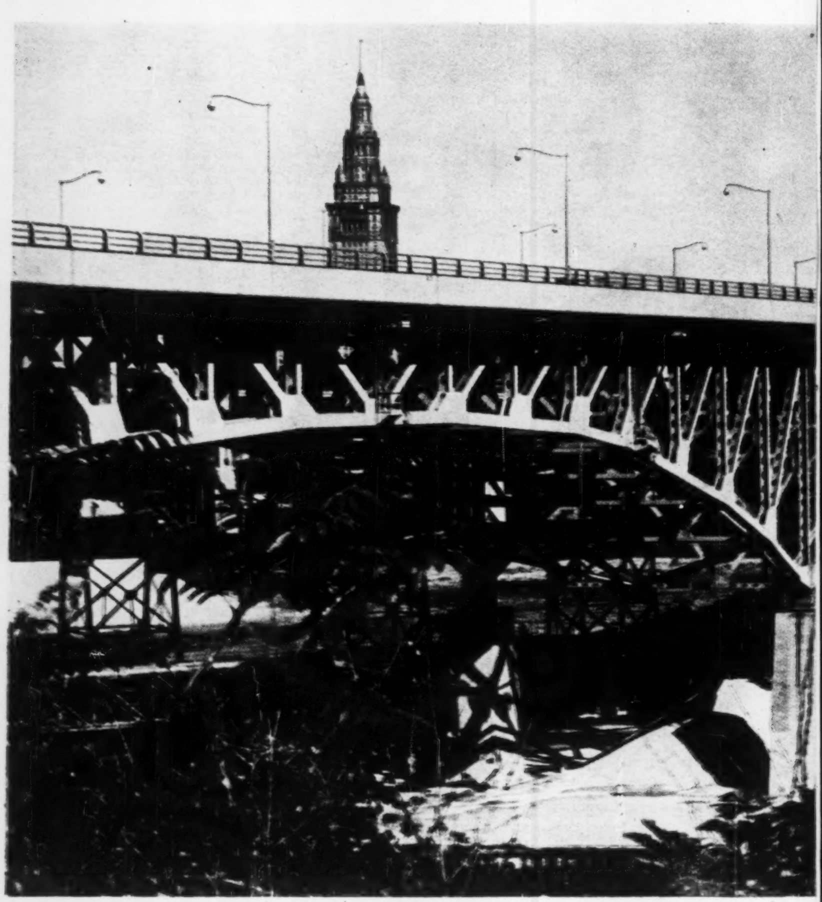
▲† **Charles J. Craig Constr. Co.**, 1610 Westminister Drive, Columbia 4, S. C., LB **$1,376,240**, FLEET BALLISTIC MISSILE SUBMARINE TEAM TRAINING BLDG., U. S. Naval Base, NBY-37355, Spec. 37355/61, CHARLESTON, S. C. Director, Southeast Division, Bureau Yards & Docks, Bldg. No. 13, U. S. Naval Base, Charleston, S. C. BA 12/12/61. CD 11/6/61.

▲ **Southeastern Constr. Co.**, P.O. Box 7264, Atlanta, Ga., LB **$1,129,000**, OFFICE, ATLANTA, GA. Great Republic Holding Corp., 1330 W. Peachtree St., NW, Atlanta, Ga. BA 12/7/61. CD 11/21/61

(Continued on page 196)

This mark tells you a product
is made of modern, dependable Steel.

Cleveland Inner Belt Freeway Bridge is part of the Interstate Highway System. **Consulting Engineer:** Howard, Needles, Tammen & Bergendoff, St. Louis. **General Contractor for Main Bridge:** John F. Beasley Construction Company, Chicago. **General Contractor for East Approaches:** Horvitz Company, Cleveland. **General Contractor for West Approaches:** National Engineering and Contracting Company, Cleveland. **Structural Steel Fabricator for Entire Bridge:** Fort Pitt Bridge Works, Pittsburgh.



Huge Cleveland bridge combines USS High Strength and Carbon Steels to save weight and reduce costs.

The new $18 million, eight-lane Cleveland Inner Belt Freeway Bridge is 116 feet wide and 4,223 feet long including the approaches. It can handle 95,000 vehicles a day. The $8,130,000 contract for superstructure erection was the largest single contract ever awarded by the Ohio Department of Highways.

The bridge spans the Cuyahoga River, a dock area, two major highways, a railroad freight station, numerous tracks and industrial buildings. This made adequate clearance a major problem which high strength steels helped to solve.

The design firm of Howard, Needles, Tammen and Bergendoff specified high-strength low-alloy steels combined with ASTM A7 and A373 carbon steels to obtain maximum economy, lighter weight and adequate strength with less bulk. Fort Pitt Bridge Works used the "Family of USS Steels" in fabrication. USS MAN-TEN (A440) and USS COR-TEN High Strength Steels with yield points of 46,000 psi (or, recently, 50,000 to 1½", for USS COR-TEN Steel) permit designing to working stresses of 24,000 psi compared to 18,000 psi for A7 steel.

In the main structure, 4,813 tons of USS MAN-TEN (A440) Steel were used in the highly stressed members, 7,481 tons of A7 carbon steel were used for members where stresses were lower, while a few tons of USS COR-TEN Steel were used in rocker plates, or shoes, and expansion joints. USS MAN-TEN Steel is the economical steel to use for riveted applications as it saves money when weight is reduced by 17% or more. Weight saved on many of the large truss members made of USS MAN-TEN Steel amounted to about 25%. USS COR-TEN Steel is superior where considerable resistance to atmospheric corrosion is required.

On the east approach, underpass clearances were extremely critical (web depth limited to 8′) and spans were long. Here, 3,199 tons of USS MAN-TEN (A440) Steel and 3,016 tons of carbon steel were used.

On the west approach, clearances were not as critical and spans were shorter. 1,764 tons of carbon steel were used in the relatively deep, continuous plate girders and framed-in floor beams and stringers.

In all, nearly 21,000 tons of steel went into the bridge and approaches. Some 661 tons were miscellaneous items such as drainage pipe, downspouts, structural castings and forgings.

United States Steel also makes A36 (36,000 psi minimum yield point) structural carbon steel, USS TRI-TEN Brand High-Strength Low-Alloy Steel (50,000 psi minimum yield point) and USS "T-1" and "T-1" type A Constructional Alloy Steels (100,000 psi minimum yield strength) for bridges and buildings. For more information on these steels, write to United States Steel, Room 6432, 525 William Penn Place, Pittsburgh 30, Pennsylvania. USS, MAN-TEN, COR-TEN, TRI-TEN and "T-1" are registered trademarks.

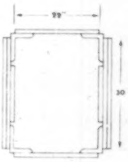
United States Steel Corporation • Columbia-Geneva Steel Division • National Tube Division • Tennessee Coal and Iron Division • United States Steel Supply Division • United States Steel Export Company

USS Steels for Design	**PSI Min. Yield**
Structural Carbon Steel (A373)	32,000
Structural Carbon Steel (A7)	33,000
Structural Carbon Steel (A36)	36,000
USS COR-TEN High Strength Steel	50,000*
USS MAN-TEN High Strength Steel (A440)	50,000**
USS TRI-TEN High Strength (A441)	50,000**
USS "T-1" Constructional Alloy Steel	100,000

*in thickness to 1½" incl.

**in thickness to ¾" incl.

Steel saving comparison in a large truss chord—Cleveland Viaduct



USS MAN-TEN (A 440) Steel			A7 Carbon Steel		
	Cross Section Area Sq. In.	Lbs./Ft.		Cross Section Area Sq. In.	Lbs./Ft.
Four Angles, 8x6x⅞	45.92	156.40	Four Angles, 8x6x1	52.00	176.80
Four Web Plates, 30x13/16	97.50	331.52	Four Web Plates, 30x1 3/16	142.50	484.52
One Top Plate, 22x⅝	13.75	46.75	One Top Plate, 22x⅞	19.25	65.45
One Bottom Plate, 22x¾ (10" Hole)	9.00	22.72	One Bottom Plate, 22x1 (10" Hole)	12.00	41.42
Two Inside Plates, 14x⅞	24.50	83.30	Two Inside Plates, 14x1	28.00	95.20
Total Area	190.67	640.69 Total Lbs./Ft.	Total Area	253.75	863.39 Total Lbs./Ft.

Steel weight saved with USS MAN-TEN (A440) Steel 25%

United States Steel USS

NOW PACKAGED for big savings

WISCONSIN ENGINES DESERVE WISCONSIN PARTS
AE-75-D-51
Stellite
EXHAUST VALVE CONVERSION KIT
STELLITE-FACED VALVE
SOLID STELLITE VALVE SEAT
VALVE SPRING
POSITIVE VALVE ROTATOR
VALVE LOCKS

CONVERSION TO STELLITE saves money and engines in heavy duty work. You get from 300% to 500% longer valve life and top engine efficiency.

NEW PARTS KITS
factory-engineered for
WISCONSIN ENGINES

You save up to four ordinary valve jobs with the **new Wisconsin Stellite exhaust valve conversion** kit — and for just **$12.85** per valve. Stellite resists extreme heat, abrasion, wear, galling, and pitting. Rotators prevent carbon and gum build-up.

Our TriCrome® ring sets enable you to re-ring Wisconsin Engines with moderately worn, tapered, and out-of-round cylinders for *one-third the cost of reboring*. And now you can get them in .010", .020", and .030" oversizes for the same price . . . from **$4.25** per set for singles to **$16.60** for the V-4's.

The 4-pack Oil Filter Cartridge kit, with gaskets, is a bargain at **$4.45.** Calibrated to Wisconsin Engine pressures, these cartridges assure a correct flow of clean oil at all times.

Our high-temperature safety switch *automatically* protects your Wisconsin against burn-out through overheating . . . **$5.95.**

Complete kits assure uniform performance, and cost less than if you bought the parts individually. Ask your Wisconsin Engine Service Station for Parts Bulletin Form S-280, or write Dept. C-11.

CHECK THESE TOO;
- Fuel Pumps
- Fuel Pump Repair Kits
- Carburetor Repair Kits
- Major Magneto Repair Kits
- Magneto Point and Condensor Kits
- Spray Paint Kit, with Decals
- and tools to make your servicing job easier

WISCONSIN MOTOR CORPORATION
MILWAUKEE 46, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines

CIRCLE 55 ON READER SERVICE CARD

Since 1938 . . .

Jennite J-16®

This trademark has identified the original and most widely-used protective coating for blacktop pavements. It doubles service life, reduces maintenance expense, improves appearance . . . protects your investment.

MAINTENANCE® INC. WOOSTER OHIO

Write for Bulletin S-2992 Distributors Everywhere

(Continued from page 193)

▲ **Mimosa Apartments,** c/o F. H. Kilgore, Jr., First National Bank Bldg., Atlanta, Ga., Owner Builds, **$1,000,000,** 101,000 sq. ft. APARTMENT, ATLANTA, GA.

Witters Constr. Co., 1397 SE 10th St., Hialeah, Fla. LB Approx. **$400,000,** (4 bidders), SHOPPING CENTER, between Salzedo St. and Lejeune Rd. and between Andalusia and Valencia Aves., CORAL GABLES, FLA. James Sottile, Jr., 2525 Indian Mount Trail, Coral Gables, Fla. BA 11/30/61. CD 11/16/61.

Chavis Constr. Co., P.O. Box 1169, Pensacola, Fla., LB **$449,000,** Church SANCTUARY-EDUCATIONAL BLDG., WARRINGTON (BR. PENSACOLA), FLA. Warrington Baptist Church, Warrington, Fla. Charles H. McCauley, 1917 5th Ave. S., Birmingham, Ala., archt. BA 12/6/61.

N. C. Morgan Constr. Co., 1925 Queen City Ave., Tuscaloosa, Ala. LB **$939,000,** WOMEN'S RESIDENCE HALL, TUSCALOOSA, ALA University of Alabama, P.O. Box 1957, Tuscaloosa, Ala. BA 12/7/61. CD 11/25/61.

Richard C. Rogers & Co. Lamar Life Bldg., Jackson, Miss., Owner Builds, **$600,000,** 75,000 sq. ft. SHOPPING CENTER, Ellis Ave. and Lynch St., JACKSON, MISS.

▲ **Pruitt Built Homes,** Lime Kiln Rd., Louisville 7, Ky., Owner Builds, **$1,600,000,** 40 HOUSES, Old Dinwiddie Lampton Estate, 17 acres, Lexington Rd., LOUISVILLE, KY.

C. Standafer, P.O. Box 7, 700 Pine St., Lexington, Ky., LB **$236,750,** 1 story, 84 x 227 ft., brick CHEESE PLANT ADDN., STANFORD, KY. Stanford Creamery, Stanford, Ky. BA 12/5. CD 11/20/61.

Richard E. Hunt, P.O. Box 195, Lebanon, Tenn., CA **$559,000,** PLANT, COOKEVILLE, TENN. City, City Hall, Cookeville, Tenn. Bowser, Inc., lessee. BA 10/30/61 CD 11/9/61, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲† **Illinois**—BA On Or About 2/6—U. S. Eng., Clock Tower Bldg., Rock Island, HADLEY-McCRANEY DIVISION-FLOOD CONTROL PROJECT, The Sny Basin, Pike Co., near Kinderhook, incl. clearing, grubbing preparation of embankment and structure foundation areas, protection and unwatering, approx. 376,100 cu. yd. common excav., approx. 192,600 cu. yd. backfill, approx. 3,012,00 cu. yd. fill, approx. 8,650 cu. yd. bedding layers and riprap, approx. 2,764 cu. yd. concrete in aqueducts, approx. 3,800 bbl. portland cement, approx. 427,400 lb. steel reinforced waterstops, two sluice gates 60 x 60 in. with accessories, seeding, CIVENG-11-117-62-22, $2,500,000. Plans deposit $1. CD 10/4/61.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., State Depts. Bldg., Columbus, Zone 15, Bids opened 12/12, ROADS,

O.—Heffner Constr. Co., 509 N. Main St., Celina, O., LB **$586,415,** est. $701,400, (10 bidders), imprv. and partial relocating about 5¼ mi. State Rte. 81 near village of Lafayette, incl. new bridge over Little Hog Creek, Proj. 732, Allen Co.;

O.—A. J. Baltes, Inc., 11 Olive St., Norwalk, O., LB **$2,242,783,** est. $2,185,200, (7 bidders), cloverleaf interchange, US Rte. 21 and US Rte. 40 east of Cambridge, Proj. 733, Guernsey Co.;

O.—V. N. Holderman, 890 Oakland Park Ave., Columbus, O., LB **$997,883,** est. $1,434,200, (7 bidders), 1½ mi. Interstate Rte. 70 east of Zanesville, Proj. 736, Muskingum Co.;

O.—Sutton & Stewart, Inc., 841 National Rd., Bridgeport, O., LB **$283,119,** est. $334,400, (9 bidders), imprv. about 2 mi. State Rte. 564 south of Caldwell, incl. four bridges over Middle Fork Duck Creek, Proj. 737, Noble Co.;

O.—John R. Jurgensen & Co., 3535 Roundbottom Rd., Cincinnati, O., LB **$424,818,** est. $452,800, (3 bidders), imprv. about 4 mi. State Rte. 49 in and near village of Phillipsburg, incl. two bridges over North Branch Run Creek over Brush Creek, Proj. 739, Montgomery Co.

OHIO—State Hy. Dpt., State Depts. Bldg., Columbus, Zone 15, Bids opened 12/12, BRIDGES,

O.—Allen Stone Co., Box 127, Chesterhill, O., LB **$117,962,** est. $134,800, (7 bidders), bridge, State Rte. 555 near Morgan-Washington Co. Line and imprv. intersection State Rtes. 555 and 676, Proj. 735, Morgan and Washington Counties;

O.—B. G. Danis Co., 1518 E. 1st St., Dayton, O., LB **$414,879,** est. $468,700, (13 bidders), three grade separation structures over US Rte. 25 at Shoop, Evanston and Springfield Rd., Proj. 734, Miami and Montgomery Counties. CD 11/21, under Streets and Roads.

Don King Constr. Co., Jackson, O., CA **$305,052,** WATER TREATMENT PLANT, LOGAN, O. City, City Hall, Logan, O. CD 6/28/60.

National Constr. Co., 23500 Lakeland Blvd., Cleveland 23, O., LB **$427,000,** Chagrin Blvd. SEWER, SHAKER HEIGHTS, O. City, City Hall, 3400 Lee Rd., Shaker Heights 20, O. BA 12/8/61. CD 11/28/61.

Leon Boulton & Son, Inc., 3935 Westland Ave., Toledo, O. LB **$185,749,** est. $215,413, (4 bidders), WATER LINES, LATERALS in Holland Village Area, known as Water Supply Line No. 640, Angola Rd. and Village of Holland, TOLEDO, O. Bd. Comrs. Lucas Co., Courthouse, Toledo, O. BA 12/6/61. CD 8/18/61.

Earth Constr. & Engineering, Inc., 3333 Engle Rd., Fort Wayne, Ind., CA **$181,366,** Div. 11, Part A, SEWER PROJECT, ANGOLA, IND. City, City Hall, Angola, Ind. BA 10/23/61.

O'Harrow Constr. Co., 1510 N. West St., Jackson, Mich., LB **$592,312,** sludge-type SEWAGE DISPOSAL PLANT, CADILLAC, MICH. City, City Hall, Cadillac, Mich. BA 11/28. CD 11/2/61.

J. Mancinelli Constr. Co., 23511 Kean Ave., Dearborn, Mich., CA **$194,676,** (10 bidders), Proj. PW-3970, 2,965 lin. ft. SEWERS in tunnel, 4 ft. 0 in. to 3 ft. 0 in. and 4 ft. 6 in. and 951 lin. ft. open cut, 12- to 30-in., etc. Yorkshire, Rochelle, Riad, Grayton Sts., DETROIT, MICH. City, 528 City-County Bldg., Detroit 26, Mich. BA 11/21. CD 11/3/61.

BUILDINGS—LB & CA

Mar Mil Constr. Co., c/o Irwin Stein, 24635 Twickenham Dr., Beachwood, O., Owner Builds, **$960,000,** 32 HOMES, Barkston Dr., HIGHLAND HEIGHTS (Br. Cleveland), O. Richard Mumper, 2891 Green Rd., Cleveland 21, O., archt.

▲ **Peyronnin Constr. Co., Inc.**, 1901 N. Kentucky St., Evansville, Ind., LB **$1,107,000,** HOSPITAL ADDN., REMODELING, WASHINGTON, IND. Bd. Comrs. Daviess Co., Courthouse, Washington, Ind. BA 11/14/61.

▲ **Johnson Drake & Piper, Inc.**, 112 N. 7th St., Terre Haute, Ind., CA **$1,107,000,** general contract PHYSICS BLDG., URBANA, ILL. University of Illinois, 256 Administration Bldg., Urbana, Ill. Shaw, Metz & Assocs., 208 S. LaSalle St., Chicago 4, Ill., archts. CD 11/9/61, under LB.

▲ **W. E. O'Neil Constr. Co.**, 2751 N. Clybourn Ave., Chicago, Ill., LB **$1,155,177,** 5 story SCIENCE BLDG., University of Illinois, URBANA, ILL. University of Illinois, Admin. Bldg., Urbana, Ill. BA 11/28/61. CD 11/17/61.

▲ **Alfred A. Smith, Inc.**, 721 E. Saratoga Ave., Ferndale 20, Mich., CA **$2,101,828,** (12 bidders), Prop. 1, general contract JUNIOR HIGH SCHOOL, OAK PARK, MICH. Oak Park Bd. Educ., 13900 Grazon Ave., Oak Park, Mich. BA 11/30. CD 11/16/61.

▲ **Darin & Armstrong, Inc.**, 2041 Fenkell, Detroit 38, Mich., CA **$1,000,000,** 1 story, 140,000 sq. ft. face brick, porcelain panels, masonry block, DEPARTMENT STORE, 1,400 car-parking, Gratiot and 13 Mile Rd., ROSEVILLE, MICH. John B. Kilroy, 618 S. Spring St., Los Angeles, Calif. Gem International, Inc., St. Louis, Mo., lessee. CA 11/1.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

STREETS AND ROADS

January 3, 5 Minnesota — January 4 Kansas

† **Arkansas**—BA 1/11—U. S. Eng., 300 Broadway, Little Rock, BANK STABILIZATION, incl. 16,000 lin. ft. trenchfill and stonefill revetment, 4,100 lin. ft. stonefill revetment, 4,100 lin. ft. stonefill dikes, 900 lin. ft. bankhead, 456,000 cu. yd. excavation and grading, 414,000 tons quarry-run stone with fines, 12.4 acres erosion control, Arbuckles Island Cut-off control structures, Arkansas River, Crawford and Sebastian Counties, CIVENG-03-050-62-70B. $782,000. CD 12/12/61.

BUILDINGS—BA

Neb., Omaha—BA 1/18—Asst. Supt. of Schools, Bus. Services, 3902 Davenport St., Florence ELEMENTARY SCHOOL, 36th and King Sts. $700,000. Plans deposit $25. John Latenser & Sons, 1307 Farnam St., archts. CD 12/22/59.

BUILDINGS—SLC

Mo., St. Louis—Eastman Enterprises, Inc., 2908 Brannon Ave., Zone 10, soon lets contract 1 story, 55,000 sq. ft. WAREHOUSE, Hampton Industrial District. Over $200,000. Pioneer Liquor Co., lessee.

HEAVY CONSTRUCTION—LB & CA

▲ **MISSOURI**—State Hy. Dpt., Jefferson City, Bids opened 12/7, ROADS,

Mo.—**Cameron, Joyce & Co.**, 19 S. 7 St., Keokuk, Iowa, LB **$795,239** (4 bidders), gr., culverts and dual 24 ft. conc. pavts. 2.799 mi. Proj. I-80-4(10) 197, Warren Co.; LB **$654,999** (2 bidders), gr., culverts, 2-24 ft. conc. pavts. 2.746 mi. Proj. I-70-4(7)182, Warren Co.;

Mo.—**Parsons Constr. Co., Inc.**, Rte. 61 North, New London, Mo., LB **$95,548** (8 bidders), gr., culverts, gran. surf. 7.383 mi. Proj. S-961(2), Harrison Co.; LB **$146,192** (6 bidders), gr., culverts, gran. surf. 4.117 mi. Sec. 16(1), Cape Girardeau Co.;

Mo.—**J. A. Tobin Constr. Co.**, 3701 Rainbow Blvd., Kansas City, Kan., LB **$226,747** (8 bidders), gr., culverts, 6 in. R.S.B., bit. mat. surf. 3.566 mi. Sec. 51(2), Johnson Co.; LB **$191,068** (8 bidders), gr., culverts, bit. mat. 4.996 mi. Sec. 51(1), Johnson Co.;

Mo.—**Bridges & Co., Inc.**, 1844 E. Sunshine, Springfield, Mo., LB **$128,700** (4 bidders), gr., culverts, 3.883 mi. Proj. S-2018(1), Christian Co.;

Mo.—**Norris Constr. Co. & J. P. Strother**, Ottumwa, Iowa, LB **$182,857** (9 bidders), 20 ft., bit. surf. 10.834 mi. Sec. 94(1), Scotland Co.;

Mo.—**Peter Kiewit Sons Co.**, R.F.D. 1, Bois D'Arc, Springfield, Mo., LB **$421,595** (4 bidders), gr., culverts 1-24 ft., conc. pavt. 2.827 mi. Proj. F-65-2(3), Greene Co.;

Mo.—**R. G. Aldridge Contractor**, 1610 Nebraska, Kansas City, Kan., LB **$257,952** (4 bidders), gr., culverts, 1-24 ft., conc. pavt. 0.947 mi. Proj. I-70-3(45)149, Callaway Co.;

Mo.—**Millstone Constr., Inc. & Bangert Bros. Road Builders, Inc.**, 8510 Eager Rd., St. Louis 17, Mo., LB **$1,787,877** (8 bidders), gr., culverts, 1-24 ft., conc. pavt. 5.515 mi. Proj. I-70-4(14)218, St. Charles Co.;

Mo.—**Payne & Dolan, Inc.**, 1545 Waukegan Rd., Glenview, Ill., LB **$153,926** (6 bidders), 22 ft., bit. resurf. 12.994 mi. Sec. 62(1), Maries Co.;

Mo.—**Atkinson-Windler Co.**, 10 Hickory St., Chillicothe, Mo., LB **$295,011** (1 bidder), gr., culverts, 2-25 ft., driving lanes 0.66 mi. Proj.U-11-1(1), Linn Co. CD 11/17/61.

Millstone Constr. Co., Inc. & Bangert Bros. Road Builders, Inc., 8510 Eager Rd., Brentwood 17, Mo., CA **$475,816,** est. $521,980 (5 bidders), c. conc. PAVING, WID'N. 1.07 mi. New Florissant Rd. between Interstate Hy. 270 and Harrison Ave., Florissant, ST. LOUIS COUNTY, MO. St. Louis County Bd. P. Wks., Courthouse, Clayton 5, Mo. BA 12/7. CD 11/24/61.

† **J. L. Putnam**, Ada, Okla., LB **$373,782,** est. $160,000. Site No. 1 EARTHFILL RETARDING STRUCTURE, Fourche-Maline Creek Watershed, near Wilburton, Inv. No. Fourche-Maline No. 1, OKLAHOMA, Fourche-Maline Conservancy Dist. No. 10, P.O. Box 487, 208 E. Main St., Wilburton, Okla. BA 12/5/61.

Benning & Mueller, Box 1107, Casper, Wyo., CA **$221,807,** (3 bidders), 68 mi. DISTRIBUTION LINES, near Craig, Moffatt Co., Colo. and Vernal, Daggett Co., Utah, COLORADO and UTAH. Moon Lake Electric Assn. Vernal, Utah. BA 1/29/61. CD 10/31/61.

▲† **Chicago Bridge & Iron Co.**, 610 Center Plaza, Phila., Pa., LB **$1,794,000,** Brackish WATER CONVERSION DEMONSTRATION PLANT, ROSWELL, N. M. Office of Saline Water, Dpt. Interior, C St. bet. 18 and 19th Sts. N. W., Wash., 25, D. C. BA 12/12/61. CD 10/5/61.

BUILDINGS—LB & CA

Don R. Stark, Inc., 319 W. Main St., Ottumwa, Iowa, LB Est. **$675,000,** 34 unit, 55 x 260 ft., brick, rein.-con. steel MYERS MEMORIAL MANOR, OTTUMWA, IOWA. B. Trustees, Myers Memorial Manor, 1335 N. Elm St., Ottumwa, Iowa. BA 11/16/61. CD 11/10/61.

Industrial Constr., Inc., 4150 Laclede Ave., St. Louis 8, Mo., CA Est. **$254,000,** 1 story, 200x249 ft. WAREHOUSE and OFFICE, 5432 Highland Park Dr., Highland Park Industrial Center, ST. LOUIS, MO. Meyer Blanke Co., 310 Russell Ave., St. Louis 4, Mo. Wm. Marx, 4150 Laclede Ave., St. Louis 8, Mo., archt.-engr.

Ernest Spencer Engineering Co., 601 North Van Buren St., Topeka, Kan., CA **$175,000,** GRAIN STORAGE ELEVATORS, 160,000 bushels at Acres and 200,000 bushels at Sitka, KANSAS. Ashland Cooperative Exchange, Ashland, Kan.

▲ **Henry C. Beck Co.**, 1st National Bank Bldg., Dallas, Tex., CA Est. **$12,500,000,** 31 story LTV TOWER OFFICE, DALLAS, TEX. National Bank of Commerce, 914 Elm St., Dallas, Tex., Ling-Temco-Vought, Inc., 1200 Jupiter Rd., Garland, Tex., Electro-Science Investors, Inc., 727 S Central Expressway, Dallas, Tex., and American Life Insurance Co., Life Bldg., Dallas, Tex. CD 10/23/61.

Fisher Constr. Co., P.O. Box 66328, Houston, Tex., LB **$410,000,** 2 story, 25,000 sq. ft. piling foundation, steel conc. frame, masonry and glass walls, BANK, GALVESTON, TEX. Moody National Bank, 2219 Market St., Galveston, Tex. BA 11/30/61. CD 11/28/61.

Space Constr., Inc., 2510 Ingersoll St., and **F. A. Reinschmidt, Co.**, 2007 Swift St., Houston, Tex., CA **$405,000** 30,000 sq. ft. masonry TRUCK TERMINAL, also 140,000 sq. ft. concrete and asphalt paved area 5510 Armour Drive, HOUSTON, TEX. Lee Way Motor Freight, Inc., 1020 West St., Houston, Tex.

Western Village, Inc., Hickory Tree Rd., Dallas, Tex., Owner builds **$425,000,** SHOPPING CENTER, MESQUITE, TEX. CD 7/10/61.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

January 4 Washington — January 17 California

STREETS AND ROADS

January 3, 9, 17, 18 California — January 4 Washington
January 9 Idaho

Ore., Portland—BA 12/29—City, City Hall, 7,030 ft. 30- to 36-in. Units 4 and 6 SOUTHEAST SOUTHWEST WATER SUPPLY LINE. Plans deposit $25.

Calif., Los Angeles—BA 1/5—Los Angeles County Flood Control Dist., 2250 Alcazar St., Walgrove Ave. STORM DRAIN, Santa Monica-Venice Area. $644,800. M. E. Salsbury, ch. engr. CD 11/10/58.

† **Calif., San Diego**—BA 1/9—Southwest Div. Bureau Yards & Docks, 1220 Pacific Hy., Zone 32, install BINS, Naval Air Station, North Island, Spec. 38020. $100,000-$250,000. CD 9/8/58.

BUILDINGS—BA

▲ **Wash., Tacoma**—BA 1/2—State Dpt. General Admin., General Admin. Bldg., Olympia, mechanical and electrical contracts for JUVENILE RECEPTION, DIAGNOSTIC and TREATMENT CENTER. $1,500,000. Extended date. Paul DeLaney & Assocs., Maritime Bldg., Seattle, Zone 4, archts. CD 12/4/61.

▲ **Hawaii, Honolulu**—BA 1/4—City and Honolulu Co., Punchbowl and King Sts., (Third Increment, First Phase), Wahiawa INTERMEDIATE SCHOOL, Wahiawa. $1,011,000. Plans deposit $50. Alfred Preis & Assocs., 1520 Kona St., archts. CD 8/21/61.

† **Oregon**—BA 1/5—U. S. Forest Service, 729 NE Oregon St., Portland, RESIDENCES, BARRACKS, WAREHOUSE, Steamboat Ranger Station, Umpqua National Forest, Douglas Co.

▲ **Wash., Tacoma**—BA 1/5—State Dpt. General Admin., General Admin. Bldg., Olympia, general contract for converting former Cushman Hospital to JUVENILE RECEPTION, DIAGNOSTIC and TREATMENT CENTER. $1,500,000. Extended date. Paul DeLaney & Assocs., Maritime Bldg., Seattle, Zone 4, archts. CD 12/4/61.

Ore., Eugene—BA 3/1—Bd. Higher Educ., Box 5175, Eugene, 44 unit HOUSING, State 4, Westmoreland Village, University of Oregon. Lutes & Amundson, 200 S. Mill St., Springfield, archts.

BUILDINGS—SLC

Calif., Carpinteria—Intelleux, Inc., 30 S. Salsipuedes St., Santa Barbara, soon lets contract ELECTRONICS PLANT. $500,000. CD 1/19/61.

Wash., Spokane—Gonzaga University, E. 502 Boone St., soon lets contract 2 story, bsmnt., 48,500 sq. ft., rein.-con. air-conditioned CHEMISTRY BLDG. $800,000. Culler, Gale & Martell, Realty Bldg., archts. Norrie & Davis, Realty Bldg., engrs. CD 1/13/60.

HEAVY CONSTRUCTION—LB & CA

Emil H. Krall, 1825 N. 11th St., Phoenix, Ariz., CA **$301,672,** est. $352,000, (6 bidders), DIGESTERS, 23rd Ave. SEWAGE TREATMENT PLANT, PHOENIX, ARIZ. City Dpt. P. Wks., City Hall, Phoenix, Ariz. CD 7/10/61.

WASHINGTON—State Hy. Comn., Transportation Bldg., Olympia, Bids opened 12/5, ROADS,

Wash.—**Associated Sand & Gravel Co., Inc.**, Box 2037, Everett, Wash., LB **$196,667** (5 bidders), clearing, grubbing, grading, bit. surf. treatment, b. conc. c. conc. paving 2.99 mi. Primary State Hy. 1, Proj FA F 001-4(13) U. 001-3(28), King and Snohomish Counties;

Wash.—**J. J. Welcome & Sons Constr. Co.**, 16600 N.E. 77th St., Redmond, Wash., LB **$182,249** (6 bidders), grading, bit. surf. treatment, b. conc. paving, precast concrete bridge 3.443 mi. Cedar Grove revision, Proj. FA S 0874(1), King Co.;

Wash.—**Midway Asphalt Co.**, Box 23, Midway, Wash., LB **$128,430** (3 bidders), grading, bit. surf. treatment, soil cement base, b. conc. paving 1.503 mi. S. 188th St., Proj. FA S 0380(3), King Co. CD 11/15/61.

† **Bureau P. Rds.**, Morgan Bldg., Portland, Ore., rejected bids Nov. 29, grading, base 3.457 mi., 100 ft. bridge, Mt. Hood Hy. Proj. 49-2(1) Hood River, OREGON. Est. **$419,990.** CD 11/14/61.

† **OREGON**—Bureau P. Rds., Morgan Bldg., Portland, ROAD,

Hamer Corp., Box 428, Roseburg, Ore., CA **$680,415,** grading 8.624 mi. North Umpqua Hy., Douglas Co BA 11/9/61, CA 12/5/61. CD 11/15/61, under LB

▲† **S. S. & C., Inc.**, 4502 51st St. SW, Seattle, Wash. and **West Coast Electric Co.**, 3419 11th St. SW, Seattle, Wash., CA **$1,362,698,** POWER HOUSE, incl. installing government furnished equipment, Cougar Reservoir, ENG-35-026-62-62, OREGON. U. S. Eng., Pittock Block, Portland, Ore. BA 12/1/61. CD 12/7/61.

Snelson Plumbing & Heating Co., Sedro-Wooley, Wash., CA **$500,075,** WATER LINE, DISTRIBUTION SYSTEM, BAKER, ORE. City, City Hall, Baker, Ore BA 11/15/61. CA 12/1/61. CD 11/22/61, under LB

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento, ROAD,

Harms Bros. and Lord & Bishop, Inc., 5261 Stockton Blvd., Sacramento, Calif., CA **$3,741,510,** 6.8 mi. four lane freeway on US Hy. 40 Alt. between 0.4 mi. south of Oroville and 0.6 mi. north of Wicks Corner, Butte Co. BA 11/15. CD 11/20/61, under LB

† **Pioneer Electric Ltd.**, One Rockwood Pl., Winnipeg, Man., Canada, LB **$289,785** (7 bidders), three 39,000/52,000/65,000 kva outdoor POWER TRANSFORMERS for Spring Creek Powerplant, Central Valley Proj., Redding, Shasta Co., DS 5653, CALIFORNIA Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. **BA 12/7.** CD 11/22/61.

▲ **G. Vella & Dominic Giangregorio**, 1212 E. Huntington Dr., Duarte, Calif., CA **$1,388,733,** Woodbury Road STORM DRAIN, Pasadena, LOS ANGELES, CALIF. Los Angeles County Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. BA 10/20. CD 11/1/61 under LB.

▲ **Winston Brothers and Green Constr. Co.**, P.O. Box 1218, Arcadia, Calif., LB **$2,527,632** constr. portion INTERCEPTOR SEWER, Contr. 2, Sched. 1, SAN DIEGO, CALIF. City, Rm. 161, Civic Center Bldg., San Diego 1, Calif. BA 12/13 CD 11/21/61.

BUILDINGS—LB & CA

▲ **Allis-Chalmers Mfg. Co.**, 1126 S. 70th St., Milwaukee, Wis., CA Est. **$2,000,000,** LIME PLANT, TACOMA, WASH. Pacific Lime Co., Ltd., c/o Dominion Tar & Chemical Co., Ltd., Sun Life Bldg., Montreal, Que. Canada. CD **5/11/61.**

Gale M. Roberts, 338 W. 11th Ave., Eugene, Ore., CA **$732,366,** SHASTA JUNIOR HIGH SCHOOL, EUGENE, ORE. Lane County School Dist. No. 52, 4656 Barger Ave., Eugene, Ore. BA 10/31/61. CD 11/6/61, under LB.

Teeples & Thatcher, 8850 SE Otty Rd., Portland, Ore., CA Est. **$750,000,** EXPRESS TERMINAL, PORTLAND, ORE. Pacific Intermountain Express, 2800 NW 25th Ave., Portland, Ore. James C. Gardiner, 3158 SW 87th Ave., Portland, Ore., archt.

(Continued on page 199)

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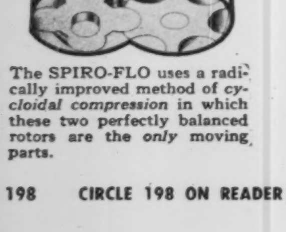

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CIRCLE 198 ON READER SERVICE CARD

(Continued from page 197)

▲ **Heller-Nielson Constr. Co.**, 2671 24 St., Sacramento, Calif., CA **$1,983,000**, 8 story International Business Machines OFFICE, Capitol Mall Redevelopment Proj., SACRAMENTO, CALIF. Developer Charles E. Brown, c/o Dreyfuss & Blackford, archts., 2729 I St., Sacramento, Calif. BA 11/7. **(Correction—contractor).** CD 11/22/61, under CA.

Alpha-Burke Contg. Co., 2020 Auiki, Honolulu, Hawaii, CA **$900,670**, HOSPITAL and HOME ADDNS., ALTERATIONS, Proj. 20, HONOLULU, HAWAII. Kuakini Hospital and Home for Aged, 347 North Kuakini St., Honolulu, Hawaii. BA 10/12, CA 12/1. CD 10/20/61, under LB.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

January 10 Ontario

Ont., Toronto—BA 1/30—Municipality of Metropolitan Toronto, 67 Adelaide St. E., F. G. GARDINER EXPRESSWAY incl. rein.-con., structural steel elevated structure, Cherry St. to Don River, incl. Don River diversion and utility bridge, reconstr. Keating St. bridge, (R-41-61). Over $500,000. Plans deposit $100. Lakeshore Expressway Consultants, 30 Eglinton Ave. E., engrs.

HEAVY CONSTRUCTION—LB & CA

Maritime Builders Ltd., Wellington St., Sydney, N.S., CA Est. **$280,000**, BASE IMPRTV., Royal Canadian Air Force Base, Lingan Rd., SYDNEY, N. S. Defense Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont.

▲ **ONTARIO**—Dpt. Hys., Parliament Bldgs., Downsview, ROADS,

Ont.—**Keystone Contractors Ltd.**, 2490 McDougall St., Windsor, Ont., LB **$910,791**, granular base, c. conc. pavement, hot mix paving 12.45 mi. Hy. 401 from 12 mi. west of Hy. 4 westerly to Hy. 76 (north lane only) (61-211), London, CD 11/1/61;

Ont.—**Cox Constr. Ltd.**, Box 413, Guelph, Ont., LB **$217,912**, grading, granular base, hot mix paving 5.3 mi. Hy. 73 (61-204), Harrietsville., BA 11/1/61, CD 11/1/61;

Ont.—**H. J. McFarland Constr. Co., Ltd.**, Talbot St., Picton, Ont., LB **$112,629**, grading, granular base hot mix paving 1.17 mi. Selby Diversion, Hy. 41 (61-218), Selby.

Louis Donolo (Ontario) Ltd., 2790 Dufferin St., Toronto, Ont., CA **$624,755**, SEWAGE TREATMENT PLANT, PRESTON, ONT. Ontario Water Resources Comn., 801 Bay St., Toronto, Ont. BA 10/17/61. CA 12/8/61. CD 10/23/61, under LB.

Associated Standard Wire & Cable Ltd., 70 Wingold Ave., Toronto, Ont., LB **$425,790**, supply 141 mi. CONDUCTOR, MONTREAL, QUE. Quebec Hydro-Electric Comn., 107 Craig St. W., Montreal, Que. CD 10/21/55.

Leo Contracting Co., Ltd., 120 Overbrooke Pl., Toronto, Ont., LB **$297,157**, approx. 1 mi. 48 in. WATER MAIN, Bayview Ave. (W-4-61), TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont., BA 12/5/61, CD 11/24/61;

Swansea Constr. Co., Ltd., 363 A Rogers Rd., Toronto, Ont., LB **$117,796**, approx. 3,600 lin. ft. 36 in. WATER MAIN, Lawrence Ave., Mildenhall Rd. and St. Leonard's Ave., North York, (Toronto, Ont.) BA 12/5/61. CD 11/28/61.

George Wimpey & Co., Ltd., Box 10 Islington, Ont. LB **$425,827**, approx. 8,745 ft. East Highland Creek SANITARY TRUNK SEWER (D-21 and D-22-61), TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. BA 12/5/61. CD 11/20/61.

QUEBEC—Provincial Roads Dpt., Parliament Bldgs., Quebec City, BRIDGE,

Sud Ltee, 1160 Belvedere Ave., Quebec City, Que., LB **$223,550**, two rein.-con. bridges, Trans-Canada Hy., at intersection Hy. 13, Notre Dame du bon Conseil and intersection of 4th and 5th rang St. Cyrille Rd., Q.E. 26, Notre Dame du bon Conseil.

BUILDINGS—LB & CA

Roslyn Investments Ltd., 205 Paris Bldg., Winnipeg, Man., CA Est. **$490,000**, 11 story, 110 suite, 53 x 158 ft. APARTMENT, 595 River Ave., WINNIPEG, MAN. Owner, c/o contractor.

Bennett-Pratt Ltd., 5 Maple Leaf Dr., Weston, Ont. LB **$498,551**, 1 and 3 stsory, precast concrete frame brick, block MONTROSE PUBLIC SCHOOL with underground parking, TORONTO, ONT. Bd. Educ., 155 College St., Toronto, Ont. BA 12/5/61, CD 11/15/61;

Gardiner-Wighton Ltd., 7 Superior Ave., Toronto, Ont., LB **$497,221**, 1 and 3 story, precast concrete frame, brick and block MONTROSE PUBLIC SCHOOL, with outside parking, (Toronto, Ont.).

▲ **Hiawatha Developments Ltd.**, 187 Betty Ann Dr., Willowdale, Toronto, Ont., Owner Builds, **$1,217,000**, 169 suite, concrete block, brick APARTMENT, Eglinton Ave. E., TORONTO, ONT. Goldhagen & King Co., 5330 Yonge St., Toronto, Ont., **archt.**

J. G. Fitzpatrick Ltd., 5151 Western Ave., Montreal, Que., LB **$456,300**, (13 bidders), 1 and 2 story, rein.-con. ELEMENTARY SCHOOL, Parkview-Prudential Area, CHATEAUGUAY, QUE. Chateauguay Protestant School Bd., Chateauguay, Que. BA 12/5/61. CD 11/15/61.

Leonard J. Weber Constr. Co., Ltd., 4505 Brebeuf St., Montreal, Que., LB **$455,000**, 2 story, 85 x 212 ft., brick, rein.-con. UNEMPLOYMENT INSURANCE COMN., Galt Ave., MONTREAL, QUE. Dpt. P. Wks., Sir Charles Tupper Bldg., Riverside Dr., Ottawa, Ont. BA 12/6/61. CD 11/9/61.

Quemont Constr. Ltee, 6655 Cote des Neiges Rd., Montreal, Que., CA Est. **$400,000**, 3 story, precast concrete, structural steel RETREAT HOUSE, PIERREFONDS, QUE. R. R. Soeurs de Ste. Croix and Des Sept.-Douleurs, Retreat House, 21255 Gouin Blvd. W., Pierrefonds, Que. Paul Goyer, 3776 Queen Mary Rd., Montreal, Que., archt. Elo Paul Roy, 3333 Cavendish Blvd., Montreal, Que., engr.

AMERICANS ABROAD

HEAVY CONSTRUCTION—LB & CA

▲ **Vitroselenia, (subsidiary Vitro Corp. of America**, 261 Madison Ave., New York 16, N. Y., U. S. A. and **Selenia S.p.A.**, subsidiary Raytheon Co., Foundry Ave., Boston, Mass., U.S.A.), CA Est. **$15,000,000**, design, construct and manage MISSILE TEST RANGE, SARDINIA, ITALY. Italian Air Ministry, Rome, Italy.

LATIN AMERICA

HEAVY CONSTRUCTION—BA

▲ **Peru**—BA 1/4—Office General Administration, Posts & Telecommunications, Central Post Office Bldg., Lima, modernization National TELECOMMUNICATIONS SYS $20,800,000. Plans deposit $200. Extended date CD 8/28/61.

HEAVY CONSTRUCTION—LB & CA

▲ **Alvarez, Roesch, Toledo & Co., Ltda.**, 6a Calle 3-73, Zona 1, Guatemala City, Guatemala, LB **$4,838,161**, DREDGING, PIERS and WAREHOUSE, Stage 2, Port of Matias de Galvez, GUATEMALA. Ministry of Finance & Public Credit, Guatemala City, Guatemala. CD 10/9/61.

FOREIGN

HEAVY CONSTRUCTION—BA

▲ **Guinea**—BA 1/29—Ministere Des Travaux Publics, Ville De Conakry, Republique De Guinee, WATER SCHEME incl. fresh water pipe line 56 mi. long from Grandes Chutes to Conakry; TREATMENT PLANT and two RESERVOIRS.

New Zealand, Mangere—BA 2/20—Secretary, Tenders Bd., Ministry of Works, Box 8015, Wellington, constr. Auckland INTERNATIONAL AIRPORT.

For additional reports see CONSTRUCTION DAILY REPORTS SECTION

(Proposal Advertisements see pp. 213 to 215)

WE SOLVE PEOPLE PROBLEMS!

We're not so good at making dams or bridges or tractors or cement or even steam shovels In fact, we don't even try. BUT we are very good at building movable places to do things in like live and work. Especially for people. Because we help solve people problems. Like when your project needs lots of people and there's no place to put them. And you don't want to build a big city to leave when your project is done. You see we build mobile units. When your job is finished, you take them with you and use them again some time. We even build them to government specifications. Please write us and find out how we can help you solve your people problem.

MOBILE HOLDINGS CORPORATION

manufacturers of Crusader/Rod & Reel Mobile Homes

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On Indiana Test Road . . .

in both first cost
concrete provides big

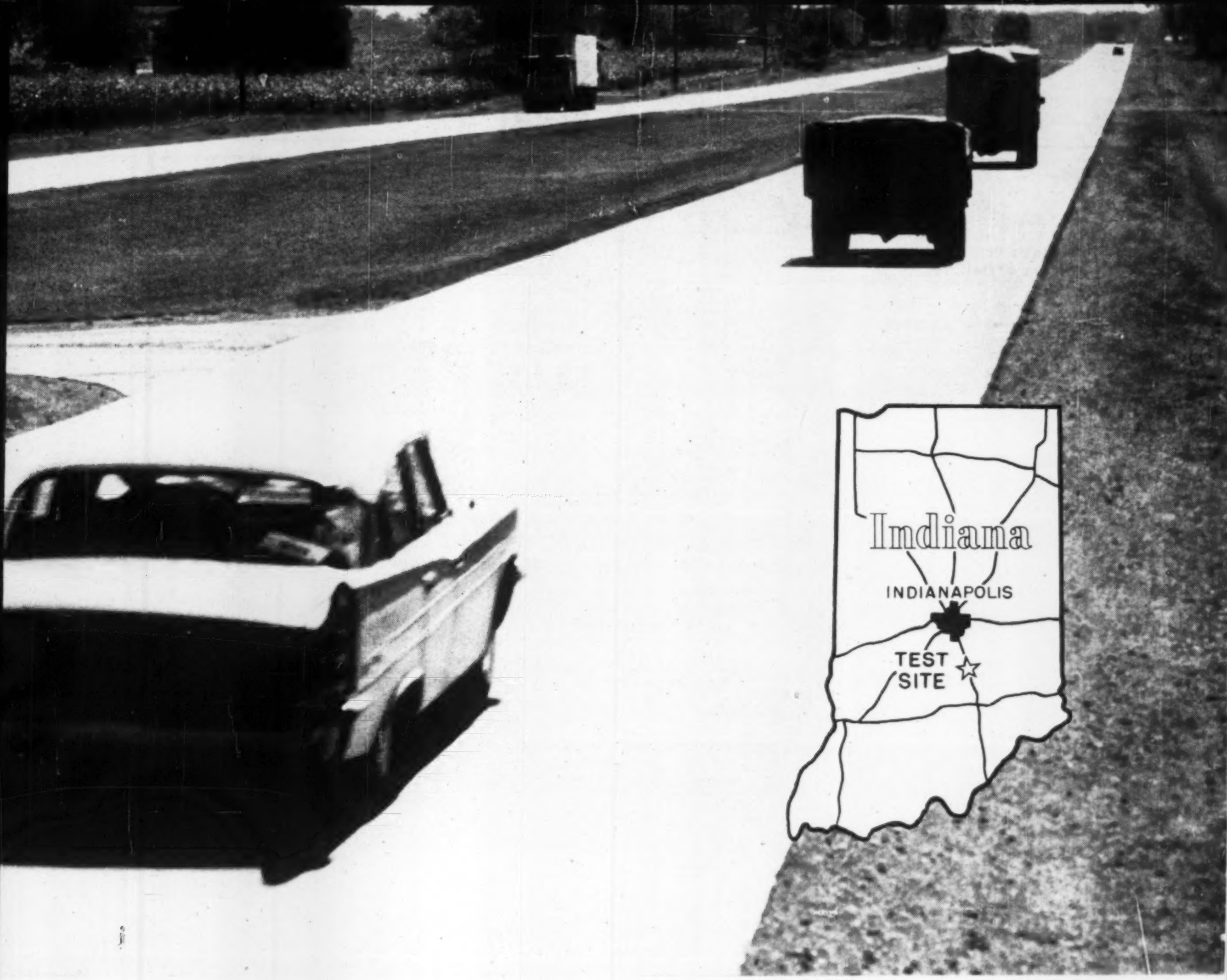
Official test road, as ordered by the General Assembly, completes 8 years under traffic. Reports, published as required by law, show concrete outperforming asphalt by a wide margin.

The Indiana Test Road was ordered by the General Assembly to "provide adequate and conclusive tests" of both concrete and asphalt pavements under exacting conditions. The test site is on U.S. 31, the main Indianapolis-Louisville route. Connecting stretches were paved with concrete (6.7013 mi.) and asphalt (7.1417 mi.)—the respective designs being approved by the portland cement and asphalt associations. In 8 years, traffic on both pavements has been the equivalent of 1,169,000 axle loads averaging 18,000 pounds.

Official results, published by the Indiana State Highway Commission, show savings in initial expense for concrete. The construction cost for concrete was $2,873.73 per mile *less* than for asphalt.

PORTLAND

A national organization



Indiana Test Road, located south of Indianapolis on U.S. 31. Concrete pavement still rides like new after 8 years of traffic.

and total upkeep savings over asphalt

Maintenance figures for the first 8 years show the total for the concrete has been only 10.7% that of the asphalt. Concrete: $38.74 per mile. Asphalt: $360.67 per mile.

In addition, after only 8 years, the asphalt section was completely resurfaced. The cost: $37,708.82—or $5,280.09 per mile. Thus, grand total savings with concrete so far run $8,475.75 per mile.

Impressive economies like these are why concrete is first choice for Interstate and heavy-duty routes.

SUMMARY OF 8-YEAR SAVINGS WITH CONCRETE ON THE INDIANA TEST ROAD

	per mile basis
First cost savings	**$2,873.73**
***Total upkeep cost savings**	**$5,602.02**
Total savings per mile	**$8,475.75**

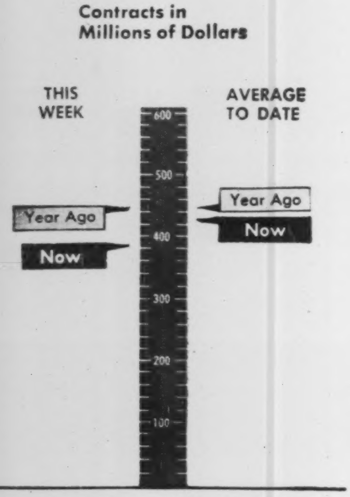
*Actual upkeep cost figures, 1953-1961: surface maintenance for concrete, $38.74; surface maintenance for asphalt, $360.67, resurfacing for concrete, $0.00; resurfacing for asphalt, $5,280.09.

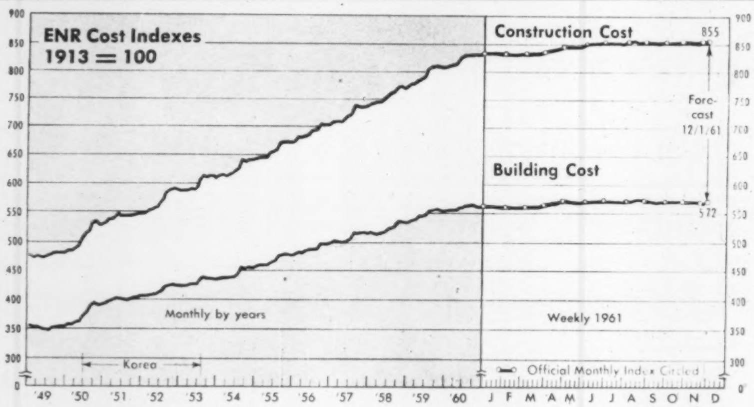
CEMENT ASSOCIATION

to improve and extend the uses of concrete

Construction Scoreboard

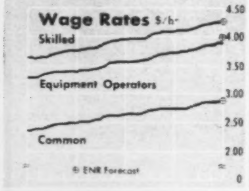
This Week . . .

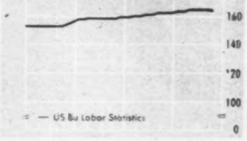


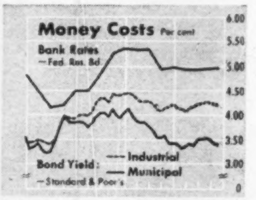


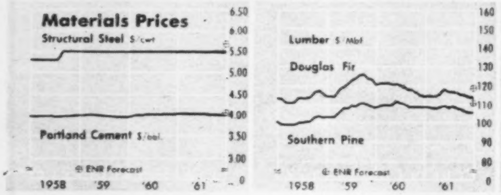
ENR INDEXES (1913=100), 20-cities' average	Week of Dec. 14 1961	% Change from Nov. 16 1961	% Change from Dec. 15 1960
Construction Cost	855.15	+0.01	+3.0
Building Cost	570.64	+0.02	+1.6

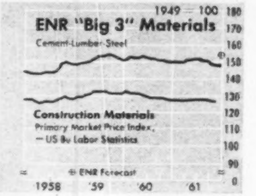
To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.











AMOUNT OF CONTRACTS LET

Contracts Awarded In 50 States By Type	This Week (millions)	Cum. 51 wks 1961 (millions)	Chge '60-'61 %
All Heavy Construction	$384.7	$21,724.3	− 3
By Ownership			
PRIVATE	156.9	10,778.9	− 8
PUBLIC	227.8	10,945.4	+ 3
State & Municipal	190.4	8,673.3	+ 6
Federal	37.4	2,272.1	− 5
By Type of Work			
PUBLIC			
Waterworks	15.6	427.1	− 5
Sewerage	16.6	806.1	+35
Bridges*	14.9	648.4	−18
Highways	87.8	3,674.5	+ 9
Earthwork, Dams & Waterways	8.0	798.2	+ 3
Buildings:			
Excl. Housing	57.8	2,592.3	+ 4
Housing	7.0	785.2	+11
Unclassified	20.1	1,215.0	−14
PRIVATE			
Buildings:			
Mass Housing	72.2	4,991.2	− 9
Commercial	57.5	2,576.8	+ 3
Industrial	11.7	2,756.7	− 1
Unclassified	15.5	152.8	−54

*Includes Private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	Week of Dec. 14 (millions)	Cum. 50 wks 1961 (millions)	Chge '60-'61 %
Corporate Securities	$110.3	$3,472.9	− 6
State and Municipal:			
All Except Housing	176.6	6,700.8	+10
Housing	0	126.6	−41
Federal Loans	4.6	234.4	+32
Federal Aid	0	3,535.7	+10
Total Nonfederal	$291.6	14,070.4	+ 5
Federal Appropriations:			
Projects in U. S.	0	3,448.1	+ 9
Outside U. S.	0	145.4	− 9
Total New Capital	$291.6	$17,663.8	+ 6

MATERIALS SHIPMENTS

		1961 Oct. (O) Sept. (S)	1961 Cum. (No. of Mos.)	% Chg. from Year Ago Mo.	% Chg. from Year Ago Cum.
Portland Cement, Bur Mines	thous bbls	35,410(O)	277,453(10)	+ 7	+ 2
Concrete Paving Awards, PCA	thous sq yd	8,671(O)	91,664(10)	+ 2	+ 4
Fabricated Structural Steel	thous tons	354(O)	3,186(10)	+0.5	− 2
Bookings, AISC	thous tons	303(O)	3,411(10)	+23	+11
Reinforcing Bars, Net, AISI	thous tons	228(O)	2,091(10)	−0.3	+11
Lumber, total NLMA	mil fbm	2,814(O)	26,647(10)	+ 5	−10
Production, total	mil fbm	2,842(O)	26,945(10)	+ 1	−10
Orders, total	mil fbm	2,840(O)	27,435(10)	+ 8	− 3
Douglas Fir	mil fbm	658(O)	6,493(10)	+ 7	− 3
Southern Pine	mil fbm	595(O)	5,640(10)	+14	+ 2
Unfilled Orders, Douglas Fir	mil fbm	446(O)	481(10)*	+ 5	−13*
Southern Pine	mil fbm	211(O)	233(10)*	+26	+18*
Clay Products, Bureau of Census					
Brick, Unglazed, Common, Face	mil bri	595p(S)	4,816p(9)	− 2	− 4
Vitrified Clay Sewer Pipe	thous tons	165p(S)	1,333p(9)	−11	− 7
Structural Tile, Unglazed	thous tons	136p(S)	330p(9)	− 8	−12
Asphalt Products, Bureau of Census					
Asphalt Roofing	thous sales sqs	7,060p(S)	45,662p(9)	+ 3	+ 1
Asphalt Siding	thous sales sqs	95p(S)	616p(9)	− 1	+ 1
Aluminum, Wrought, Net, Bur Census					
Sheet and Plate (non-heat treatable)	mil lbs	105p(S)	944p(9)	+ 7	+ 1
Wire and Cable	mil lbs	32p(S)	263p(9)	+20	+14
Extruded Shapes (soft alloys)	mil lbs	77p(S)	646p(9)	+11	+ 4

EMPLOYMENT AND FAILURES

Contract Const Employment, BLS	thous	3,014(O)	2,778(10)*	− 3	− 4*
Contractor Failures, Dun & Bradstreet					
Number		221(O)	2,331(10)	− 4	+ 9
Liabilities	thous	$14,583(O)	$157,379(10)	−18	+ 1

* Average per month p = preliminary figures

Work Backlog Up in November

New plans for construction increased in November when $2,311 million flowed into the offices of architects and engineers. (For more on consulting engineers' business and prospects, see p. 41).

Bolstered somewhat by approval of bond-issue proposals, the volume of proposed state and municipal construction came close to doubling October's proposed volume.

Sharp increases in both new commercial buildings and proposed mass housing projects also contributed to the uptrend.

New proposals for commercial buildings entering the Backlog in November totaled $348 million, a 58% rise over November, 1960. Last month's proposal-volume total pushed the 11-month tally to $3,281 million, an increase of 19% over the same period last year.

Mass housing proposals of $391 million in November represented an improvement of 103% over November, 1960. It brought the 11-month Backlog for mass housing to $3,729 million. This total, however, falls 18% below 1960's 11-month Backlog.

November's increases in mass housing and commercial buildings offset a drop in the volume of proposed industrial plants and a much lower total of private "unclassified" work. As a result, total private planning in November fell only slightly below that in October. For the 11-month period, however, volume shows a 1% increase over last year, despite a drop in housing.

So far this year, new plans for waterworks, sewerage and earthwork-dams-waterways registered extremely generous increases. The improvements, however, failed to offset the reduced flow of new proposed highways, public buildings and public "unclassified" projects.

The flow of industrial work into the Backlog continues a sawtooth pattern that started early this year. From March through August inclusive, new proposed industrial projects climbed sharply and steadily after a precipitous drop in February.

The climb from March hit a peak for the year in August. Then proposed industrial work dropped sharply in September, snapped up sharply in October, only to sag in November.

The jagged pattern of this year indicates that the rise in industrial contract volume in the first half of next year very likely will be more gradual than anticipated earlier this year when ENR forecast a 22% jump in industrial building contracts (ENR Sept. 7, p. 19).

November's inflow to the Backlog brings the total volume of proposed heavy construction in the 50 states to a record $126.7 billion. Of this total, California gets credit for the largest amount—$15.3 billion. Texas and New York scramble for second place with $12.5 billion each.

Of the $126.7-billion total, some $20.4 billion poured into the Backlog in the first 11 months of this year, while $18.2 billion moved out.

Out of the $18.2 billion, $10.7 billion went to contract awards, while the remaining $7.6 billion was eliminated for either lack of financing or a sponsor's decision not to go ahead with the planned job.

Owner-builder and design-construction projects never get into the Backlog, since construction can proceed along with design.

BACKLOG OF PROPOSED HEAVY CONSTRUCTION

	November 1961 (millions)	Percent Change from last Month	Percent Change from last Year
Total U. S. (ENR reported)	$126,719	+0.3	+1.6
By ownership—			
Private	57,915	−0.2	+3.6
State & Municipal	54,401	+0.7	+0.8
Federal	14,403	+0.9	−2.6
By Type of Work—			
Waterworks	3,171	+2.3	+9.2
Sewerage	4,402	+1.2	+7.1
Bridges	3,139	−0.2	−4.7
Highways	13,140	+1.6	−2.2
Earthwork, Dams and Waterways	12,342	+0.3	+1.3
Public Buildings	22,851	+0.4	+0.7
Industrial Buildings	18,163	−0.5	+0.5
Commercial Buildings	28,998	+0.02	+6.3
Unclassified, Private	10,754*	−0.4	+1.8
Unclassified, Public	9,759	+0.7	−4.0

* Includes Private Bridges, $112 million

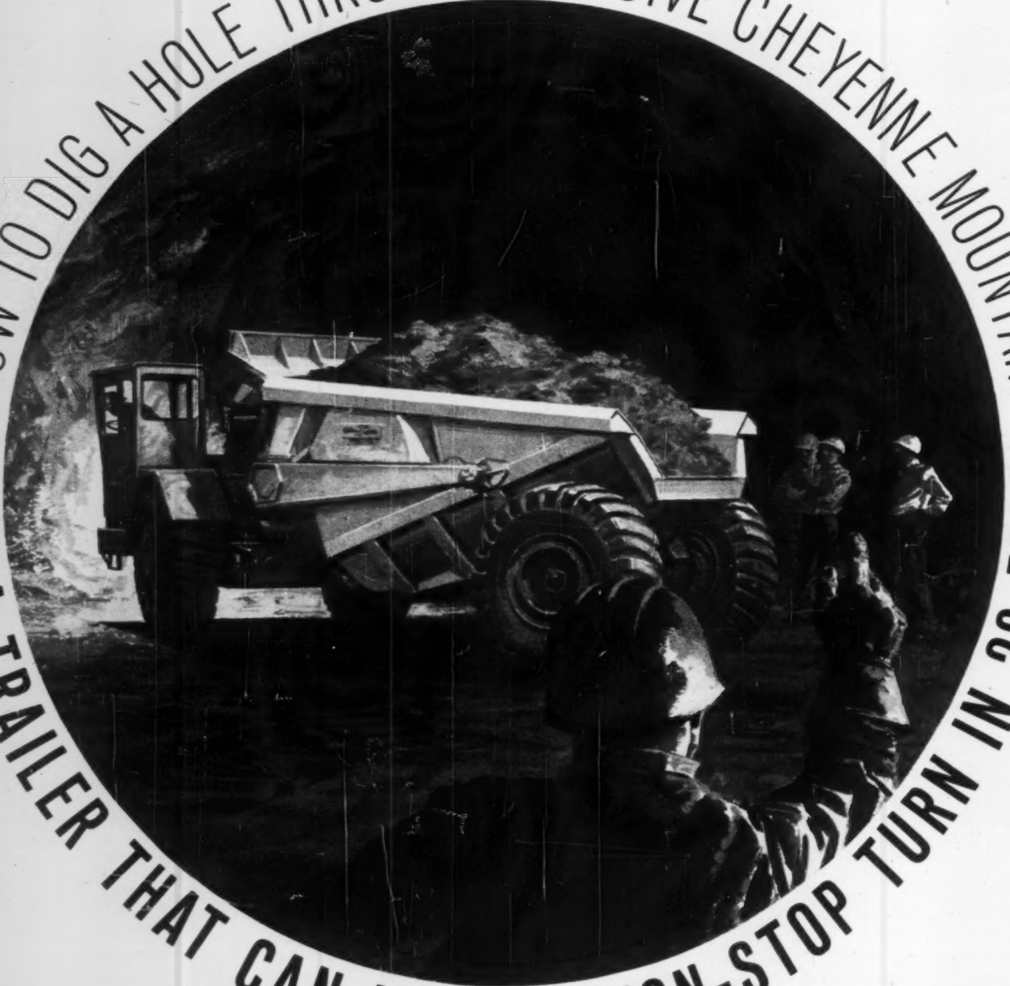
FLOW OF NEW PROJECTS INTO THE BACKLOG

	1961 Nov. (millions)	1961 11-months (millions)	Percent Change from 1960 Nov.	Percent Change from 1960 11-mos.
Total U. S. (ENR reported)	$2,311	$20,261	+41	−2
By Ownership—				
Private	939	11,220	+57	+1
State & Municipal	1,133	7,482	+31	−0.4
Federal	239	1,559	+38	−26
By Type of Work—				
Waterworks	120	666	+395	+87
Sewerage	127	921	−26	+25
Bridges	35	262	+5	+7
Highways	365	1,450	+1,247	−29
Earthwork, Dams and Waterways	108	893	+805	+43
Public Buildings	453	4,094	−34	−4
Industrial Buildings	171	3,375	+4	+8
Commercial: Mass Housing	391	3,729	+103	−18
Other Building	348	3,281	+58	+19
Unclassified, Private	29	835**	+30	+14
Unclassified, Public	164	755	+90	−44

** Includes Private Bridges, $14.5 million

FLOW OUT OF BACKLOG INTO CONTRACTS

Total U. S. (ENR reported)	1,123	10,653	+6	+2
By Ownership—				
Private	495	4,050	+10	−5
State & Municipal	533	5,183	+23	+12
Federal	95	1,420	−43	−8

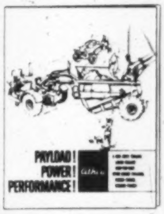


HOW TO DIG A HOLE THROUGH MASSIVE CHEYENNE MOUNTAIN

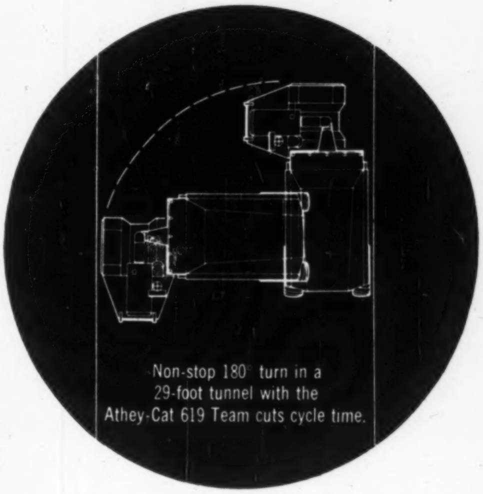
USE A TRAILER THAT CAN MAKE A NON-STOP TURN IN 29 FEET!

■ Utah Construction and Mining Co. must put a tunnel through Cheyenne Mountain in Colorado in 365 days! This means the excavation of 340,000 cubic yards of rock. It's a big job being done for the North American Air Defense Command Combat Operations Center—and Utah intends to have the job done on time. Helping to do it (and they are on schedule) are four Athey PR619s powered by powerful Caterpillar* rubber-tired tractors. Athey Trailers were picked for the job because of their 27-ton capacity and unique design features. Their ability to make a non-stop turn in the 29-foot wide tunnel, their strength and durability under the toughest working conditions, and their high payload to vehicle weight ratio were basic reasons for specifying Athey.

■ Athey also handles special projects! The equipment is versatile—often designed and constructed for a particular job. Find out how Athey Trailers can lower your hauling costs. Send for 16-page "Payload-Power-Performance" brochure giving complete information about the new line of high capacity Athey T-Line Trailers.



*Caterpillar and Cat are registered trademarks of Caterpillar Tractor Co.


Non-stop 180° turn in a 29-foot tunnel with the Athey-Cat 619 Team cuts cycle time.

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**DESIGNERS
AND MANUFACTURERS
OF HEAVY-DUTY LOADING
AND HAULING EQUIPMENT**

Business in Brief . . .

• Chopping at profits—Highway contractors, scrambling for 40 miles of Tennessee road work last month submitted apparent low bids that came in 14% below the Highway Department's estimate of $8,049,031. H. D. Long, the Department's chief engineer, attributed the low bids to contractors being "anxious to get in on the work," because "they know there will be no other lettings before mid-December."

• School requirements—Mississippi will have to spend $123 million by 1970 to meet its public school requirements, according to the state's Legislative Study Committee. The state now has 16,990 classrooms, but in 1970 will need almost 25,000.

• Voters say "yes"—Three Colorado school districts approved $13.5 million worth of school bond proposals last week. Districts and amounts are, Longmont, $4 million; Poudre, near Fort Collins, $3.2 million, Greeley, $6.4 million.

• Dallas bond vote—Bond proposals totaling $49.9 million will be voted on next month in Dallas. Proposals include, $34 million for streets, $3.8 million for storm sewers, $10.8 million for sanitary sewers and $6.6 million for waterworks.

• Gas tax boost—Delaware's legislature approved a one-cent per gallon increase in the gasoline tax. The new rate of six cents became effective last week.

• Buyer wanted—Yuba Consolidated Industries, Inc., San Francisco, received permission from a Federal Bankruptcy Referee to negotiate a private sale of its steel division. Because no satisfactory response came in under sealed-bid procedure, the court and a creditors committee authorized a negotiated sale.

• Changes coming?—Rep. George H. Fallon (D., Md.), chairman of the House Subcommittee on Public Roads, exhibits great concern over "a growing tendency among states," to use the federal-aid highway program as a source of revenue for non-highway purposes. He refers to the practice of taxing contractors a percentage of their gross highway construction-contract volume, which boosts bid prices and therefore grants-in-aid.

• Expansion—Ceco Steel Products Corp., Chicago, bought Mitchell Engineering Co. of Columbus, Miss. The latter manufactures metal buildings. The acquisition will be operated as a division of Ceco.

Mass. Tollroad Decision Due

The Massachusetts Department of Public Works thinks it will know by next May 15 whether a 12-mile road into Boston will be built as a toll extension of the Massachusetts Turnpike or as a federally aided freeway.

In May, the Department hopes to start construction of a $160-million Boston Inner Belt Expressway. Before the project gets under way, however, the question over-hanging the 12-mile link with the Inner Belt must be answered.

Gov. John Volpe and Turnpike Authority Chairman William F. Callahan still remain at odds over the route. Governor Volpe wants the freeway, but Mr. Callahan wants the tollroad extended. Neither one can yet claim a decisive victory.

The Authority failed twice this year to sell $180 million worth of revenue bonds to finance the road. Supporters of the route attributed lack of investor interest to a 5% ceiling on bond interest rates.

Last week, a Callahan rooter came through; State Rep. Charles L. Petrone filed for consideration by next year's legislature, a bill that would boost the present interest ceiling of 5% to 6%.

At about the same time Mr. Petrone filed his bill, proponents of the freeway lost one round and won another. The Protect the Hub Association announced it failed to get sufficient signatures on a petition that would put the tollroad-freeway question on a referendum ballot. It succeeded, however, in obtaining sponsorship of a bill that would repeal the Authority's right to construct a tollroad.

It may be too soon to predict a winner. It is no secret, however, that Mr. Callahan, a Democrat, qualifies as one of the most powerful figures in that Democratic state's political arena. Governor Volpe is a Republican.

Venezuela and Colombia Get Public Works Loans

President Kennedy was traveling in Venezuela and Colombia last week amidst a flurry of Alliance for Progress loan announcements.

The project grabbing the top billing is the World Bank's announced $45-million loan to Venezuela's Ministry of Public Works to cover two sections of controlled access, multi-lane tollroads. The highways will be part of a planned express highway network which will have a total cost of $160 million.

The highway sections will be constructed in north central Venezuela with one section covering a 37-mile stretch from Caracas to Tejerias.

The second section, 22 miles long, will run north from Valencia to El Palito, connecting with the coastal road to Puerto Cabello, Venezuela's second port. International bidding will be called for by the Venezuelan Department of Public Works for initial sections of the two multi-lane highways.

In Colombia, Agency for International Development has a $12-million loan out for a self-help housing program, $8 million for a land settlement program and $3.7 million for school building and teacher training. A Food for Peace program calls for sales of surplus U. S. agriculture commodities to Colombia over the next four years with Colombian payments of $41.1 million to go into rural construction projects as a form of U. S. loan.

$100-Million Project Proposed for Philadelphia

Philadelphia's Mayor Richardson Dilworth has announced another major redevelopment project as part of the city's master plan for the 21st Century, the $100-million City Hall West Plaza.

The new development in downtown Philadelphia will adjoin the $150-million Penn Center Development (ENR Oct. 13, 1960, p. 50). Public and private funds will finance it.

Old office buildings, penny arcades, hot-dog stands and assorted honky-tonk establishments now occupy the site of the City Hall West Plaza. Part of the project would include a $20-million Municipal Services Building, scheduled for construction start in May (ENR Apr. 20, p. 28).

Planned first is demolition of several buildings located west of City Hall. Together with a parking lot in the Penn Center strip, this site would become a plaza adjacent to City Hall.

Architects Wright, Andrade, Amenta & Gane have received a $54,000 contract to prepare preliminary drawings for City Hall West Plaza.

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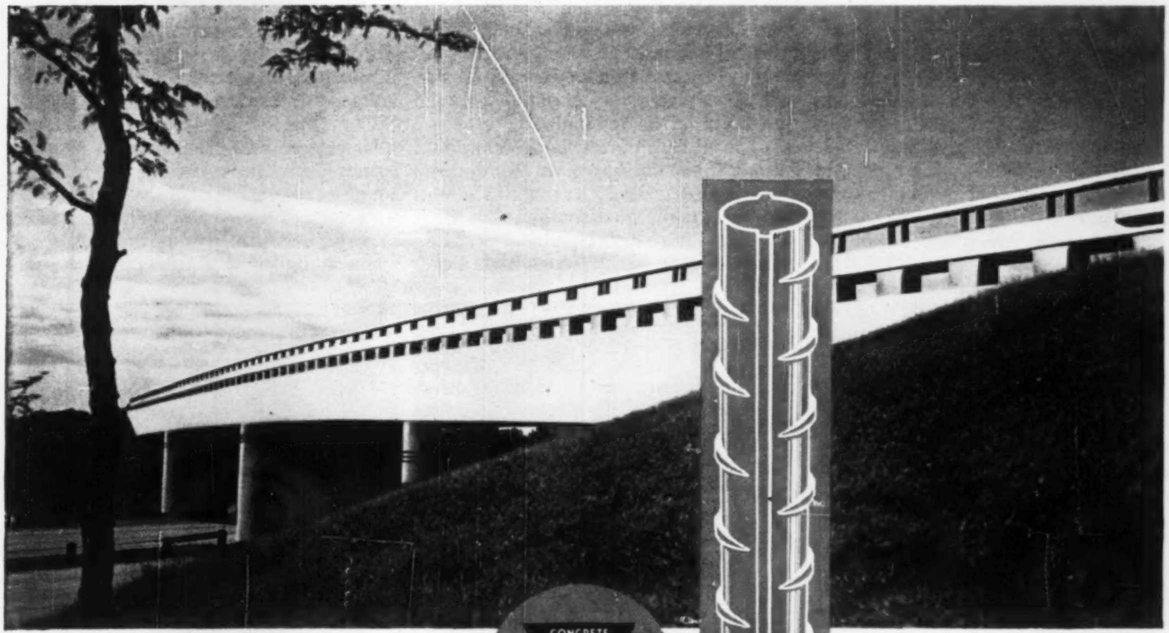

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Meany scores a victory as . . .

- **Building trades and industrial unions agree to solve their conflicts within the framework of labor unity.**
- **Federation sets up new machinery for settling union disputes without jeopardizing basic jurisdictions.**
- **AFL-CIO refuses to compromise on corruption and says "no" to Hoffa on readmission of the teamsters union.**

AFL-CIO Pulls Itself Together

The AFL-CIO took the pledge of labor unity again last week and devised a plan to treat—but not to cure—the Federation's chronic illness of inter-union warfare.

As the climax to its week-long, fourth convention, the AFL-CIO wrote into its constitution new machinery for settling jurisdictional conflicts between unions.

The new plan, effective January 1, calls for settlement of specific disputes through a combination of internal and external assistance designed to keep the in-fighting in the family and out of the courts.

Because the settlements, on a case-by-case basis, will not determine "general work or trade jurisdiction," however, the new machinery holds little hope of resolving the basic conflict between the building trades and industrial unions over performance of construction work.

Both sides, nevertheless, viewed the future of the plan with optimism as they streamed away from the Americana Hotel in Miami Beach, Fla., where the convention was held. On balance, Walter Reuther's industrial union forces appeared more satisfied with the final outcome, although Building Trades Department President C. J. Haggerty described it as a "good compromise, one that we feel we can live with."

The compromise was reached in a dramatic, all-night meeting of the Federation's 29-member Executive Council and was approved by the full convention with one dissent on the following day, December 13. The dissent came from the International Typographical Union.

The action of the Eexecutive Council headed off an open fight on the convention floor between the craft and industrial unions and was a personal triumph for unity-minded George Meany, who was later unanimously reelected president of the Federation.

The threat of an impending floor battle, one that had been building up for several weeks, was the stimulus needed for the final compromise. Both sides had reached the point of declaring open warfare, which could have meant the end of the AFL-CIO. Walter Reuther had already begun to warn the building trades that they would be "thrown out" of industrial plants if no settlement was reached.

Much of the pre-settlement heat was generated by a proposed solution from a special disputes committee, headed by machinists' President A. J. Hayes. That committee had offered a plan for compulsory arbitration of internal disputes, a solution that brought strong objections from the building trades.

The new plan sets up, instead, a system of impartial umpires to make set-

WALTER REUTHER demanded arbitration.

NEIL HAGGERTY objected to outsiders.

tlement recommendations for each dispute not resolved voluntarily at the local level or through the mediation efforts of the AFL-CIO. Enforcement of the umpires' rulings is vested in the Executive Council. The first umpire, selected by Mr. Meany with the Council's approval, is David L. Cole, currently the AFL-CIO's no-raiding referee and a professional arbitrator.

Keeping final enforcement powers within the Federation was an insistent position taken by the building trades.

Before agreement was reached on the new peace plan, the AFL-CIO neatly disposed of another problem that might otherwise have been dangerously tied into the jurisdictional problem. It killed, with a minimum of floor debate, all speculation about readmission of the exiled teamsters union.

Through an indirectly worded resolution, the AFL-CIO politely told President James Hoffa that it would process an application for readmission but that the teamsters would be considered ineligible for membership as long as Mr. Hoffa held the reins.

The action protected the anti-corruption public image of the Federation and, at the same time, appeased strong pro-teamster forces within the Federation by tacitly condoning continuance of the multiplicity of working relationships that now exist with the teamsters.

In the flush of its successful negotiations on internal disputes, the AFL-CIO leaders came to terms on other issues:

- Joseph A. Beirne of the Communications Workers Union and Gordon Freeman, president of the International Brotherhood of Electrical Workers, agreed to end their jurisdictional fight over installation of telephones in new construction. The IBEW agreed to call off organizing campaigns where the communications workers are already established. And the latter agreed not to invade IBEW areas.
- On Davis-Bacon, where the building trades and industrial unions are in disagreement over application of prevailing wages to missile site work, the convention unanimously backed a resolution urging Labor Secretary Arthur Goldberg to hear the opinions of both sides before taking final action on the Holland Committee report. That report contains suggested criteria that members of the construction industry have denounced as slanted in favor of industrial unions and their employers.
- The AFL-CIO sidetracked an industrial union demand that the sheet metal workers be ousted from the Federation for raiding the steelworkers union at the Syracuse plant of Carrier Corp. After a brief flareup on the convention floor, a resolution was adopted urging the sheet metal workers union, which won the Carrier election, to help the steelworkers, who were on strike, get employment at the Carrier plant.

JAMES HOFFA kept his teamsters out.

The convention, however, took no action, apart from adoption of the internal disputes plan, on Walter Reuther's demand that the building trades be barred from promoting maintenance by contract. The question is whether participation in the Construction Industry Joint Conference's promotion of maintenance by contract is a violation of the AFL-CIO constitution.

Some feel the new peace plan may well mean the building trades' withdrawal from that phase of CIJC activities. On this, Mr. Haggerty noted that the craft unions will be required to avoid a joint appeal with contractors for maintenance work where industrial unions are organized. In turn, industrial unions may be required to avoid extending "no-contracting-out" agreements where craft unions are already performing maintenance work.

It is apparent from the maintenance issue alone that the internal disputes plan may generate more disputes between building trades and industrial unions than it settles.

The plan plunges into the quicksands of definition, which has been the big problem in the past, by outlawing the invasion by one union of another union's "established collective bargaining relationship" and "established work relationship."

Skipping over the provocative fact that this provision legalizes past raids, the plan defines "established work relationship" to include "any work of the kind which the members of an organization have customarily performed at a particular plant or work site, whether their employer is the plant operator, a contractor, or other employer." In view of the evolution of the industrial unions and the past turmoil over historical jurisdiction, it is doubtful that this no-raiding ban contains any magic peace formula.

The plan avoids any mention of CIJC activities, no-contracting-out clauses and boycotts of the kind that occurred in the sheet metal worker-steelworker dispute at Burt Manufacturing Co. But it goes on to state that "no affiliate shall by agreement or collusion with any employer or by the exercise of economic pressure seek to obtain work for its members as to which an established work relationship exists." The language is apt to have the effect of adding new "rightful" claims to old "rightful" counterclaims, thus increasing the workload of the AFL-CIO mediators, umpires and Executive Council members under the plan.

Procedurally, the plan is this:

- Where rival unions fail to settle a dispute voluntarily, the dispute will be referred to mediators drawn from the ranks of the AFL-CIO.
- If the dispute fails of mediation, it will be referred to an arbitrator (called an umpire) selected from the outside.
- The union that loses the umpire's decision may appeal to an Executive Council subcommittee composed of Mr. Meany, Mr. Bierne and James Suffridge, head of the Retail Clerks Union. The committee may affirm the decision or refer it to the Executive Council.
- The plan contains no affirmative enforcement machinery and no union can take its dispute to court. The Executive Council, however, can apply various sanctions against noncomplying unions.
- No one under the plan has any authority to determine general work or trade jurisdiction. The effect of each settlement is limited to the specific dispute out of which it grew.

The plan is essentially the imperfect compromise that Mr. Meany earlier said affords the only possible solution. The immediate significance of its adoption is that it reunites the labor movement and ends the threat of a bolt by either the building trades or industrial unions. The plan will not end internal conflicts. It merely provides the means for eliminating the most captious one and for living with the others in an atmosphere somewhat short of open warfare.

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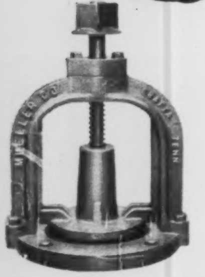

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Award by 'Interested' Arbitrator Upheld

Court, in the absence of bad faith, refuses to set aside judgment of an "interested" arbitrator

As a general rule, an arbitrator must not be an interested party to the dispute he is arbitrating. In some states like Maryland, however, the courts have held that it is not illegal to designate an official of one of the parties to the dispute as the arbitrator.

In a recent Maryland case,[1] a sewer contractor sued the City of Baltimore, charging that the city had concealed a material fact. He contended that he was confronted with seepage of raw sewage from an old sewer line when he began excavation for a new sewer and that the city's representative did not give him a map of the old line until after the seepage was discovered. After completing the work, he sought to recover the extra expense caused by the seepage.

The contract provided: "To prevent disputes and litigation, the Director of Public Works will be the referee in case any question shall arise between the contractor and the city touching the contract, and his determination, decision and/or estimate shall be final and conclusive upon the contractor and shall also be a condition precedent to the right of the contractor to receive any monies under the contract."

In pressing his claim, the contractor held a meeting with the Director of Public Works. The director, acting as arbitrator, denied the contractor's claim. The contractor then took the claim to court. The action was dismissed and the judgment was affirmed on appeal.

The contractor contended that the arbitration clause of the contract was not broad enough to cover damages resulting from concealment or misrepresentation in the inducement of the substantive portions of the contract.

The appellate court stated: "It is clear, assuming the correctness of Patapsco's claim that it was a defrauded party, that Patapsco, upon discovering the fraud perpetrated upon it by the City, had an election of remedies which are mutually exclusive. (Patapsco is the name under which the contractor was doing business.) It could, by appropriate action, promptly rescind the contract and be restored to its former position (which here would have included obtaining reimbursement for work done prior to discovery of the fraud and rescission), or it could affirm by performing the contract and claim damages due to the concealment or misrepresentation. The latter remedy was the one actually and clearly chosen, and it is, of course, an affirmance of the contract. (Citing numerous cases.)"

The court held that the contractor's action constituted an affirmance of the contract in its entirity and it was therefore bound by its provision as to the arbitration of disputes. The appellate court, further stated: "In the instant case the very issue now in litigation was submitted to the referee or arbitrator specified in the contract. It held a hearing and made an award thereon, which was adverse to Patapsco on the issue. There is no suggestion that the hearing was not fair or that the referee acted otherwise than fairly and conscientiously, except that Patapsco claims, in effect, that he could not act in such a manner because he was an official of the City. There is nothing before us to show any unfairness in fact on his part, notwithstanding that the jury later reached an opposite conclusion on the issue of concealment."

The court refers to many cases where the courts have held that the parties to a contract may provide that the settlement of disputes shall be made by an arbitrator who is an official or representative of one of the parties, and that in the absence of a showing of fraud or bad faith on his part, his determination shall be binding.

(1) Nelley vs Mayor and City Council of Baltimore City, 166 A. 2d 234, Court of Appeals of Maryland, December 15, 1960.

Court Refuses to Excuse Delay

A contractor is not relieved from liability for liquidated damages for delayed performance because of difficulty in obtaining materials needed for the job.

The question was raised in a New York case brought against the Board of Education of New York City by James T. Kelley & Son to recover $2,722.50. The contractor claimed the board had wrongfully withheld this amount as liquidated damages for delayed performance.

The Board of Education argued that the contract required completion in 120 days and that the contractor did not complete the work until 242 additional days. Pursuant to the terms of the contract, it said, the contractor was assessed liquidated damages in the sum of $2,772.50.

The board asked for a summary judgment dismissing the complaint. The request was granted. (8 Misc. 2d 1007, 169 N.Y.S. 2d 405), the court holding, that where as in this case, the contractor, when he entered into the contract, was undoubtedly aware that needed materials might not be available, unavailability of materials would not excuse the contractor from liability for liquidated damages for failure to complete the work by the time required.

The contractor appealed to the Appellate Division, and that court, by a divided opinion affirmed the judgment of the lower court. (7 A. D. 2d 856, 182 N.Y.S. 2d 342).

The contractor appealed to the Court of Appeals, contending that the contract provision for liquidated damages and the further provision to the effect that the contractor would make no claim for any damage that he might sustain through any act or omission of a subcontractor or any other contractor was invalid, unenforceable, and inapplicable. The contractor claimed that some of the delays were caused by the acts of other contractors.

The judgment of the lower court was affirmed by the Court of Appeals.[1]

(1) James T. Kelly & Son v. Board of Education, 8 N.Y. 2d 764, Court of Appeals of New York, April 28, 1960.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by Central Book Company, Brooklyn, N. Y.: *Legal Phases of Construction Contracts*; *Legal Guide for Contractors, Architects and Engineers*; *Legal Cases for Contractors, Architects and Engineers*; and *Law for Contractors, Architects and Engineers.*

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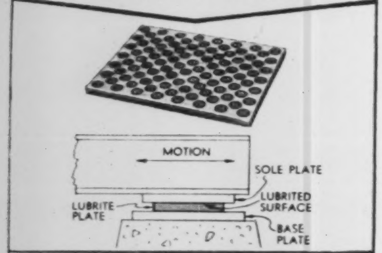

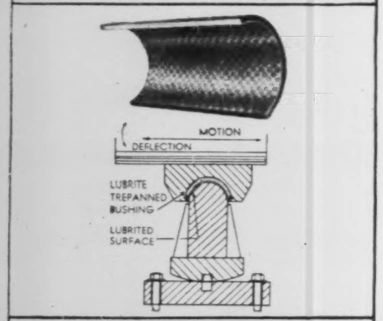

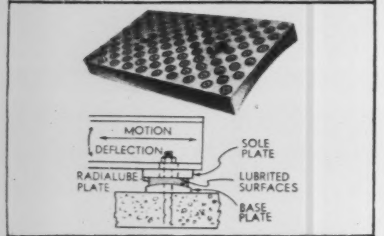

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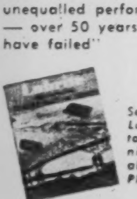

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CIRCLE 212 ON READER SERVICE CARD

Trial Waives Right to Arbitration

Participation in a trial constitutes a waiver of the right to arbitrate even though the participation is limited to a motion to dismiss the action.

The treatment of litigation as a waiver occurs in a New York case. There, a school district sued a general contractor and its surety for defective work. It also sued the architects for breach of contract.

The contract contained the following provision: "(10): All questions in dispute under this agreement shall be submitted to arbitration at the choice of either party."

The defendant architects asked the court to dismiss the action against them. The request was denied. Thereafter, the architects applied to the court to stay the action pending submission of the dispute to arbitration as provided for in the contract. This application was denied. The court held that the application to dismiss the action constituted a waiver of the right to arbitration.[1]

The court stated: "The granting of a motion for summary judgment 'is the procedural equivalent of a trial,' (Falk et al. v. Goodman, 7 N.Y. 2d 87, 91, 195 N.Y.S. 2d 645, 647). Participation in a trial constitutes a waiver of arbitration (Gold Plastering Co., Inc. v. 200 East End Avenue Corp., 282 App. Div. 1073, 126 N.Y.S. 2d 838) even though participation is limited to a motion for summary judgment (Schussel v. Schussel, Sup., 63 N.Y.S. 2d 380).

"Petitioners' course of procedure indicated an election to proceed to trial. They cannot abide by their election if successful and reject it if not (Young et al. v. Crescent Development Co., 240 N.Y. 244, 148 N.E. 510)."

(1) Board of Education, etc. v. Mancuso Bros. Inc., 204 N.Y.S. 2d 410, New York Supreme Court, Madison County.

Deed Not a Bar to Damage Suit

The acceptance of a deed to the land on which a building is being constructed is not in itself a bar to an action for breach of the terms of the building contract.

An Ohio court has held, for example, that conveyance of title and acceptance of a deed is only partial performance of a building contract and does not waive the right to sue for breach of other aspects of the contract.

The action was brought by the purchaser (Rapp) against the builder (Murray) to recover damages for defects in a house that was bought while in the process of construction.

At the time the contract of purchase was executed, the buyer was shown a copy of the plans and specifications, which called for 4 in. of concrete upon the basement floor. There was a definite representation by the seller that the floor of the basement did contain 4 in. of concrete.

Shortly after the home was purchased and after the buyer had paid the seller the purchase price of $22,200, cracks appeared in the floor of the basement and water seeped through. Rapp had the concrete flooring torn up and it was then discovered that the basement floor did not contain 4 in. of concrete, as called for by the plans and specifications, but instead contained only 1½ in. and 2 in. of concrete.

Upon discovering this condition, Rapp immediately notified Murray and demanded that he correct the condition. Murray refused to do this. Rapp had it done and brought the action to recover the cost of remedying the defects in the work. The trial court granted Rapp judgment, which judgment was affirmed on appeal.[1]

The seller, Murray, contended that the acceptance of the deed barred the right to an action for breach of contract.

The court held that a contract to convey title to real estate contains no implied warranty of title and when the deed is accepted, the warranties are limited to those contained in the contract.

In the absence of an agreement on the subject, or fraudulent misrepresentation, the court said, the purchaser takes the property as it is, no matter what its condition may be found to be.

The appellate court further stated: "But where an agreement is made on the subject, or fraud is practiced, either or both, by the vendor, his obligation to respond is the same as though no transfer of title to real estate were involved. In 55 Am. Jur., 798, it is said: 'The rule that the provisions of an executory contract for the sale of land are merged in the deed executed pursuant to that contract is subject to

(Continued on p. 214)

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exceptions and limitations in favor of collateral stipulations incorporated in the contract, but not in the deed.' "

The appellate court, after quoting from several cases and textbooks on this subject, summarized the law as follows:

"The true rule seems to be that where a contract provides for the transfer of the title to real estate, and nothing else, the deed conveying the title is in fact full performance, and is accepted as full performance of the contract. In such a case the contract can properly be said to be merged in the deed.

"But where a contract contains many provisions relating to more than one subject, one of which provides for the transfer of title to real estate, the transfer of title to the real estate is only part performance of the obligations. There are other obligations and the transfer of the real estate can in no sense be said to be performance of all the obligations or to have been intended as actual or substituted performance."

(1) Rapp v. Murray, 171 N.E. 2d 374, Court of Appeals of Ohio.

Courts Deny Arbitration Unless Issue Established

When a contract calls for the arbitration of disputes, the courts will not direct arbitration unless the presence of an arbitrable issue has first been established.

A New York court adhered to this approach in the following case and denied a contractor's request for arbitration.

The contractors for the excavation work for a housing project applied to the court for an order directing arbitration of their claim for extra work for removing rock.

The contract definitely defined what was to be rock and what was to be earth excavation. The excavation of rock was to be paid for as extra work whenever the rock was found to measure over one cubic yard in size and could not be dislodged without blasting or drilling.

The demand for arbitration was denied because the contractor did not claim that the removal of rock involved was over one cubic yard in size and could not be dislodged without blasting and dulling.

This judgment was affirmed by the appellate court'. Two of the five appellate judges dissented.

(1) George F. Driscoll Co. v. New York City Housing Authority, 193 N.Y.S. 2d 843, Supreme Court of New York, Appellate Division, December 15, 1959.

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Contract No. R-84E—Electrical Work
Contract No. R-84F—Food Service Equipment

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Contract documents may be examined during office hours on or after December 11, 1961, at the office of the Authority, and will be furnished upon payment of Fifteen Dollars ($15.00) for each set, not refundable.

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Joseph Morecraft, Jr., Chairman
December 8, 1961
R-84

U. S. Government

Issued by: General Services Administration, Public Buildings Service, Post Office and Courthouse, Boston 9, Massachusetts. Sealed bids for furnishing materials and performing the work for Remodeling of GSA-FSS Stores Depot at Hingham, Massachusetts will be received, in triplicate, until 3.00 P.M., E.S.T. on January 18, 1962 at General Services Administration, Room 204, Post Office and Courthouse, Boston 9, Massachusetts at which time they will be publicly opened and read. Specifications, etc. may be had from that office. Information regarding bidding material, bid guarantee, and bonds. Bid guaranty in the amount of 20% of the bid, but in no case more than $3,000,000, is required. (See Clause 4, Standard Form 22, Instructions to Bidders). Standard Form 23, Construction Contract, will be used and performance and payment bonds in the amounts specified will be required. Upon request, the Issuing Office will supply to each general contractor interested in bidding on the complete project 2 sets of drawings and specifications, all of which must be returned. General contractors may obtain not more than two additional sets by depositing $75.00 for each set. One set of drawings and specifications will be supplied to each principal subcontractor, as determined by the Service, upon receipt of deposit in the amount required from General Contractors. Deposits will be refunded for such additional sets if returned in good condition within 30 days after bids are opened. Deposits may be forfeited if drawings and specifications are not returned within the specified time limit. Checks or money orders for deposits or furnished as bid guaranty must be made payable to the General Services Administration. Upon request, and in the discretion of the Issuing Office, one set of drawings and specifications will be furnished to builders' exchanges, chambers of commerce, and other similar organizations, with the understanding that he set will be retained on their premises and made available for inspection by any interested subcontractor or material firm. Description of work: Remodeling of existing building having a total gross floor area of approximately 420,000 square feet, and construction of a new boiler house addition having a floor area of approximately 3,750 square feet. Includes demolition, grading, concrete work, structural steel, steel joists, steel stack, steel roof decking, composition roofing, roof repairs; exposed concrete masonry walls and partitions, steel windows, steel sliding and rolling doors, hollow metal doors and frames, interior wood doors, plaster ceilings, suspended acoustical unit ceilings, asphalt tile floors, glazing, and painting; in-floor conveyor system, adjustable loading ramps at railroad and trucking docks, airconditioning, plumbing, sprinkler system; 500,000 gals. ground water storage tank, electrical utilities, heating and ventilating apparatus; railroad work, bituminous paving and resurfacing, and wire fencing.

Sealed bids for construction of the Physical Education Building, Howard University, Washington, D. C., will be received until 2:00 PM EST, January 25, 1962, in Rm. 7122, GSA Regional Office Bldg., 7th & D Sts., S.W., Washington, D. C., and then publicly opened at the above address. Upon request, 3 sets of bidding material will be furnished to General Contractors interested in bidding the entire project; 2 additional sets may be obtained by depositing $150.00 per set. One set will be furnished to principal subcontractors, as determined by the service, upon receipt of a deposit in the amount of $150.00. Deposits will be returned for each set returned in good condition within 30 days after bids are opened. Checks or money orders should be made payable to General Services Administration. One set of drawings and specifications will be furnished to Builders Exchanges, Chambers of Commerce and other similar organizations with the understanding that the set will be retained on their premises and made available for inspection by any interested subcontractor or material firm. Request for bidding material should be made to Public Buildings Service, Rm. 1308, General Services Bldg., 19th & F Sts., NW., Washington 25, D. C., Phone EXecutive 3-4900, EXT. 2397. Commissioner of Public Buildings, General Services Administration.

Sealed bids for airconditioning phase II, at the Federal Office Building (Vesey Street), 90 Church Street, New York, N. Y., Project No. 00959, will be received until 2:00 P.M., E.S.T., January 15, 1962, and then publicly opened. Bidding material may be obtained from the Business Service Center, General Services Administration, 250 Hudson Street, New York 13, N. Y.

OFFICIAL PROPOSALS
enable you to get the greatest variety of bids —and so to get the lowest prices consistent with the best work.

Bids: January 10, 1962

Louisville & Jefferson County Metropolitan Sewer District

NOTICE TO BIDDERS

SEALED BIDS addressed to Mr. W. W. Sanders, Director of Works, 212 City Hall, Louisville 2, Ky., will be received until 12:00 Noon, E.S.T. Wednesday, January 10, 1962, for the construction of the "Highgate Springs and Terrier Lane Storm Sewers," Contract No. 396, consisting of approx. 8,500 lin. ft. 8" thru 36" storm sewers and a pumping station. Proposal, Plans and Specifications are now available from the Louisville and Jefferson County Metropolitan Sewer District, 412 W. Market St., Louisville 2, Ky., (acting as agent for the City of Louisville) upon deposit of a check for $20.00 per set payable to Louisville & Jefferson County Metropolitan Sewer District.

Each bidder's proposal must be accompanied by a Certified Check or Cashier's Check drawn on a Louisville, Kentucky, bank and payable to the City of Louisville, in the amount of Forty Thousand and No/100 Dollars ($40,000).

The City of Louisville, acting by and through the Department of Public Works, reserves the right to reject any or all bids, or waive any informality on any bid, and to accept the proposal considered by the City of Louisville, acting by and through the Department of Public Works, to be on the whole the best.

CITY OF LOUISVILLE
W. W. Sanders
Director of Works

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5725) will be received at Amarillo, Texas, until 10 a.m., Central Standard Time, January 30, 1962, for furnishing labor and materials for Sanford Dam, Canadian River Project, Texas. Location near Borger, Texas in Hutchinson County. Principal items are 6,230,000 cu. yds. excavation; 11,200,000 cu. yds. earthfill; 92,300 cu. yds., concrete; and other work. Completion time 1,200 days. For particulars, address Bureau of Reclamation, P. O. Box 2602, Amarillo, Texas; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

CONTRACTORS WATCH THIS SECTION

for New Projects

Publish your announcements thru the "Proposal Section" of Engineering News-Record and get their bids.

ADVERTISEMENT FOR TENDERS

BRITISH COLUMBIA ELECTRIC COMPANY LIMITED
PEACE RIVER HYDRO-ELECTRIC PROJECT

Tenders are invited for a contract for construction in the Province of British Columbia, Canada, of:

CONTRACT No. 3—

PORTAGE MOUNTAIN DEVELOPMENT
DIVERSION TUNNELS

Principal items of work:

(a) Excavating and concrete lining three 48 feet internal diameter horseshoe shaped diversion tunnels each approximately 2500 feet long.

(b) Excavating approximately 1,200,000 cubic yards of rock for intake open approach channel.

(c) Constructing tunnel intake and outlet works.

(d) Grouting of bedrock for part of main embankment grout curtain through which diversion tunnels pass, requiring approximately 55,000 linear feet grout holes, approximately 50,000 cubic feet of cement, and tests and exploratory work.

LOCATION

Portage Mountain Development is on the Peace River, British Columbia, at approximately longitude 122° 10' W and latitude 56° N.

CONSTRUCTION SCHEDULE

Contract No. 3 work is to commence April 1962 and be completed August 1963.

An access bridge across the Peace River near the Site, a 10 feet by 10 feet pilot tunnel, and clearing of part of the Site will be completed by others before April 1962.

CONTRACT DOCUMENTS

Contract documents may be inspected at office of General Purchasing Agent, British Columbia Electric Company Limited, 970 Burrard Street, Vancouver 1, British Columbia, Canada, from Wednesday, January 3, 1962. Copies may be obtained for $50.00 plus $2.50 B.C.S.S. tax for first copy and $25.00 plus $1.25 B.C.S.S. tax for each additional copy, no part of which shall be refunded.

INSPECTION OF THE SITE

Tenderers must inspect the Site and should make arrangements through the office of the General Purchasing Agent.

CONDITIONS OF TENDERING

Tenders must be for the entire work included in Contract No. 3. B. C. Electric will name a number of grouting specialists who will be acceptable, either on a sub-contract basis or under other arrangements, to undertake bedrock grouting of part of main embankment grout curtain through which diversion tunnels pass.

B. C. Electric Co. Ltd. reserves the right to reject any or all tenders, and to accept any tender considered advantageous to it. B. C. Electric Co. Ltd. will not be responsible for any costs incurred by any Tenderer in preparing his tender.

TENDER DEPOSIT AND PERFORMANCE BOND

A tender deposit in the form of a certified cheque or a tender bond in the amount of $1,000,000 (Canadian) must accompany each tender. Tenderers must further submit with their tenders proof of their ability to furnish the required performance bond.

SPECIAL QUALIFICATIONS REQUIRED OF TENDERERS

Tenders will be considered only from Tenderers whose financial resources, technical ability, and experience are commensurate with the work to be performed, and who have successfully completed comparable work on other projects.

SUBMISSION OF TENDERS

Sealed tenders will be received until 2 P.M., Pacific Standard Time, on Thursday, March 8, 1962 at office of General Purchasing Agent at the aforementioned address, when the tenders will be publicly opened and read aloud.

Bids: January 10, 1962

Triborough Bridge and Tunnel Authority

SEALED BIDS WILL BE RECEIVED BY Triborough Bridge and Tunnel Authority at its office, Administration Building, Randall's Island, Manhattan, New York 35, N. Y., as follows:

Until 11 A.M. Wednesday, January 10, 1962.

For Narrows Bridge Contract No. NB-12, Brooklyn Approach, Brooklyn, New York City.

Each bid must be accompanied by a deposit in the amount of $250,000.00.

The contract includes grading, drainage, concrete piers, retaining walls and abutments, seawall, steel viaducts and bridges and paving.

Plans, specifications and contract documents may be purchased at the office of the Authority for $130.00, which will not be refunded.

District of Columbia—Sewer Construction—Office of the Potomac Interceptor, Dept. of Sanitary Engineering, Dec. 12, 1961. CONSTRUCTION OF UNIT 11, the BROAD RUN SEGMENT OF THE POTOMAC INTERCEPTOR SEWER, NEAR DULLES INTERNATIONAL AIRPORT, LOUDOUN COUNTY, VIRGINIA, Contract No. DCF C-18967—(Invitation No. C-6279-S), consisting of approx. the following: OPEN CUT CONSTRUCTION: Excavation, laying and backfilling for 12,109.25 lin. ft. of 54" reinforced concrete pipe; 4,375.75 lin. ft. of 48" reinforced concrete pipe; and 1,827 lin. ft. of 42" reinforced concrete pipe. The scope includes all manholes, structures and appurtenances. Bid forms, plans and specifications are now available from Procurement Office, D.C., Room 404, 499 Penn. Ave., N.W., upon deposit of a certified check for $50.00 per set, payable to D.C. Treasurer (Phone NA 8-6000, Ext. 448). SEALED BIDS to be opened 3:00 PM, EST, January 5, 1962, in Room 424, 499 Penn. Ave., N.W.

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Phone 516- Wells 8-0600
Lockwood, Kessler & Bartlett, Inc.
One Aerial Way, Syosset, L. I., N. Y.

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• POSITIONS VACANT

C.P.A.—Years of experience in construction and taxes. Must be top man for top, steady position. P-7712, Engineering News-Record.

City of San Jose has openings for: Engineer I. Excellent opportunity for young civil engineers in fast growing municipality. Accredited degree in civil engineering or passage of E.I.T. (Senior students may take examination) Age 21-40, U.S. Citizenship, $517-$646 per month. Out of state examination can be arranged. Apply: Civil Service Department, Room 211, City Hall, 801 North First Street, San Jose, California.

Hydraulic Engineer. To head hydraulic engineering section of Central Engineering Department of large paper company. Power system has six power dams plus storage reservoirs. Experience in preparation of Federal Power Commission applications desirable but not necessary. Apply to Manager of Engineering & Research, Great Northern Paper Company, Millinocket, Maine.

Field Engineer — Permanent position with established Midwest consulting firm for man thoroughly qualified and experienced in all branches of building construction. Moving expenses paid. Electrical or process engineer preferred. Send complete resume to P-7633, Engineering News-Record.

Construction-Superintendent, excavation concrete and related works for large power plant: two years: Caribbean area. P-7921, Engineering News-Record.

Party Chief—Permanent position Southeast Consulting Firm. Highway location, primarily urban. Send complete resume including salary requirements to P-7934, Engineering News-Record.

Sanitary or Hydraulic Engineer with about five years experience in preliminary engineering and design of sanitary or hydraulic projects. Registration desirable, but not essential. Ability in writing and analysis important. Submit complete resume of education, experience and qualifications, together with salary requirements to P-7938, Engineering News-Record.

SENIOR ENGINEER

Experienced in design of refuse incinerators. Knowledge of furnace, combustion, and materials handling equipment. Salary open. Location Northeast.

Send resume of experience, education and record of past earnings to

P-7970, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

HEAVY CONSTRUCTION ESTIMATOR

Large Construction Co. in Seattle, Wash. seeking man to join estimating staff in Heavy Construction Div. Must be well qualified to assist in preparation of bids on multi-million dollar projects such as dams, power plants, tunnels, bridges and roads. Engineering background essential, field supervisory experience preferred. Send complete resume to

P-7624, Engineering News-Record
255 California St., San Francisco 11, Calif.

POSITIONS VACANT

Wanted—Superintendent for Commercial Building. Must be aggressive. Experienced. Resume on request. P-8016, Engineering News-Record.

Plant Superintendent—College graduate preferred, but must have had at least 5 years experience as superintendent of a plate steel fabricating shop. Thorough knowledge of all machine operations and all types of welding important. Must be able to plan production for efficient operations and constantly work for lower costs. Plant presently employs approximately 125 men and located in Eastern Pennsylvania. Men with only structural steel experience need not apply. Applicant should supply full background resume and salary. Excellent opportunity for right man. Interested applicants will receive consideration on a confidential basis by replying to P-7988, Engineering News-Record.

Sanitary, sewage and water treatment design. Designer-Draftsman and Engineer positions available with expanding New York consulting firm. Send resume and salary expected. P-7978, Engineering News-Record.

General Superintendent—For General Contractor in the Hartford, Conn. area. Experienced in all phases of heavy construction and capable of handling 100 men and 100 pieces of equipment on 10 different jobs at the same time. Send photo with complete resume to Thomas Colla, The Thomas Colla Company, 251 Broad St., Manchester, Conn.

Office Manager—For General Contractor in the Hartford, Conn. area. Wide knowledge of general accounting, credits and collections, costs and general office systems required. Excellent opportunity with growing firm. Send photo with complete resume to Thomas Colla, The Thomas Colla Company, 251 Broad St., Manchester, Conn.

Civil or Mechanical Engineers for field surveys and studies of water distribution systems throughout North America. Permanent positions. Excellent opportunity for advancement in small organization. Salary plus profit sharing plan. The Pitometer Associates, 50 Church St., New York 7, N. Y.

Openings for recent Civil Engineer Graduate who desire to learn the construction business. Must be ambitious, aggressive, dependable, use no intoxicants, willing to work in the field, and willing to move. We operate throughout Kansas and adjacent states. Offer excellent opportunity for advancement. Martin K. Eby Construction Co., Inc., P. O. Box 1679, Wichita, Kansas.

Civil Engineers, Structural Superintendents and Party Chiefs needed for Minuteman Missile Base construction recently started in South Dakota. Send resume to Peter Kiewit Sons' Co., 1000 Kiewit Plaza, Omaha 31, Nebraska. Equal Opportunity Employer.

(Continued on opposite page)

POSITIONS VACANT
(Continued from opposite page)

Assistant to Superintendent of Public Works, Poughkeepsie, New York. Minimum Requirements: 1. Civil Engineer, New York State License. 2. Five years field and office experience, in highway sewer, water distribution engineering. Submit application with complete resume of education and experience to: Kenneth E. Pearce, City Mgr. Poughkeepsie, New York.

Draftsman—experienced structural steel detailer and checker. Permanent position with established consulting firm. Fringe benefits. Submit resume of experience, references and salary expected. Samborn, Steketee, Otis and Evans, Libbey-Owens-Ford Building, Toledo 2, Ohio.

Superintendent of B & G for University in New England. Engineering degree. Experienced in handling complete maintenance and cleaning of buildings, grounds; maintenance and improvement, remodeling and construction supervision. Salary open. P-7999, Engineering News-Record.

Highway Design Engineer, Sr. Experience in evaluation and location of Interstate Routes in accordance with B.P.R. criteria, also client relations and reports. Salary open. Send resume and salary requirements to Lockwood, Kessler and Bartlett, Inc., One Aerial Way, Syosset, L. I., N. Y.

City Engineer—Full-time registered professional engineer, with experience in municipal engineering; streets, water and sewer work; who will also serve as Zoning and Building official, and lend personal interest and professional supervision to Public Works. 3rd Class City—Northwestern Penna., 50 miles from Erie. Home of Drake Well. Pop. 8326. Attractive town in beautiful valley. Modern schools, churches, hospital, public library, recreation park, swimming pool, athletic fields; golf courses nearby. Public Water Works and new Sewage Plant. Projects—Urban Renewal, extensive improvements to existing water system, flood control, and soil conservation. Redevelopment Authority actively working with planning consultants and government agencies. A challenge for the right man to participate in the planning and completion of many improvements. A fine place to live, work, and play—with good pay. For further information, contact Dr. C. M. Sonne, Mayor—City Hall, Titusville, Pennsylvania.

Wanted—Caterpillar Parts Manager for the Caribbean area. Age 30-45, with at least 5 years experience. Excellent salary plus housing allowance. Forward complete resume to: Personnel Director, P. O. Box 638, Nassau, N.P., Bahamas.

Mechanical Engineer. Experienced. Send resume and salary requirements. Frederic A. Nassaux & Associates, 312 Trust Building, Chambersburg, Penna.

Senior Electrical Engineer—Immediate opening with municipal utilities in a beautiful and cultural city centrally located among seashore, mountains, desert. College graduation with EE degree; five years experience in responsible electrical engineering with 3 being in electrical utility field. Registration in Cailfornia or approved registration in another state. Apply Personnel Department, City Hall, Riverside, California.

Senior Engineer (Water) Position in rapidly expanding utility. College graduate, major civil, mechanical, or hydraulics; 5 years responsible water engineering experience. California registration or approved registration in another state. Apply Personnel Department, City Hall, Riverside, California.

Creative Structural Engineer. To participate in analytical development of advanced reinforced and prestressed concrete structures. Work includes design development, technical writing and opportunities for engineering consultation and lecturing before professional groups. Small amount of traveling. Degree in Civil Engineering required, with advanced degree in structures desirable. Concrete structural design experience required. Familiarity with prestressing and concrete shells desirable. Must be able to use advanced mathematics as a tool in developing new design methods. Job located at Chicago headquarters of a national engineering organization. Excellent working conditions and advancement opportunities. Salary commensurate with experience and ability. Maximum age forty. Submit complete outline of background and experience. P-8017, Engineering News-Record.

POSITIONS VACANT

Heavy Construction Superintendent wanted immediately for permanent position on $3 million heavy rock excavation job in northern Mid-West. Give complete information on previous employment. P-8018, Engineering News-Record.

Sales-minded engineer or geologist wanted at once by fast growing company. Want responsible effective person of highest caliber as our sales representative. Submit resume and salary requirements to Earth Science Laboratories, P. O. Box 66, Campus Station, Cincinnati 21, Ohio.

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• POSITIONS WANTED

General Supt., Proj. Mgr. Hvy. Const. roads, bldgs, bridges, flood control, tunnels, pipelines, sewage disp, Civil, Mech. PW-7787, Engineering News-Record.

Superintendent Excavation—Grading Highway—flood control. Estimating—experience. PW-7959, Engineering News-Record.

Executive Manager. Available immediately. Over thirty years experience all phases heavy and highway construction. PW-7954, Engineering News-Record.

Executive Hydraulic Dredge Civil Engineer desires connection with dredge firm or dredge owner. Full time, project or consultation basis. Over 25 years experience dredge management, field investigation, cost estimates. No family, location immaterial. PW-7895, Engineering News-Record.

Manager—Precast, prestressed concrete manufacturer. Experienced in production, sales, plant design, engineering, cost accounting. Structural design background. Want position in South. PW-7980, Engineering News-Record.

Supt., Gen'l Supt., Heavy and Highway construction, all phases, available immediately, A-1 references. PW-7971, Engineering News-Record.

Construction Engineer B.S.C.E. 12 yrs experience in industrial blds. & reactors—10 yrs with present employer in supervisory capacity. Extension experiences in lay-out, formwork, structural steel, & re-steel. Working knowledge of mechanical & electrical trades. Age 38. PW-7965, Engineering News-Record.

Registered Structural Engineer, M.S.C.E., age 35. Experience bridges, foundations, structures—up-to-date on use of reinforced and prestressed concrete. Experienced in management, sales, and promotional work. South. PW-7986, Engineering News-Record.

Retired consultant, 55, Civil, Struct, seeks to invest $25M & services in establishing organization, N. Y. city area. PW-7957, Engineering News-Record.

Executive, 17 yrs const exp, efficient administrator mgr acct atty, employed. PW-7808, Engineering News-Record.

Construction Administration Engineer B.S.C.E. 53 reg. P.E. (Ill.) Project Administration-Supervision from contract to completion. 30 years experience heavy construction of subways, superhighways, tunnels, sewage treatment plants, land development and highrise architectural structures. 25 years as Resident, Administrative or Chief Engineer in complete charge of construction. Resume submitted upon request. PW-8006, Engineering News-Record.

Executive national Mechanical Contractor specializing in government work desires relocate with aggressive firm. Experienced as project manager, estimating, negotiating large volume work. Age 37. PW-8002, Engineering News-Record.

Construction Business Manager—Completely familiar with all administrative phases of General Contracting Business—heavy experience in Government contracting including Capehart Housing Projects—also industrial and commercial—age 44, salary $16,000. Available Feb. 1, 1962. PW-8000, Engineering News-Record.

POSITIONS WANTED

Professor—BCE, MS and further graduate work, registered. Now project engineer for renowned firm of consulting engineers, prefers return to Eastern or Mid-Western university with reasonable housing near campus. Experience includes 2½ years full-time and 6 years part-time teaching of hydraulic, sanitary and other civil engineering courses and 12½ years very responsible non-academic work. PW-8019, Engineering News-Record.

Licensed PE with excellent contacts in east & overseas as Consultant representative. Very successful background. Salary & expenses. PW-8007, Engineering News-Record.

Construction Engineer—Registered. 10 yrs. industrial, 5 yrs. heavy const., 10 yrs. design-reports. Supervising, administrative, planning exper. Desire to settle Southeast U. S. PW-7998, Engineering News-Record.

Arch., Specifications, Writer. 15 yrs. exp. bldg. construction, legal & technical phases. Fed. Gov't, state, municipal, industrial, commercial projects. PW-7994, Engineering News-Record.

Geologist—Soils Engr: BS, MS, PE 3 states, 31, fmly. 3 yrs broad exp Hwy soils & foundns; 5 yrs. Geol, aerial photos, surv, Archit& Engrg drftng. PW-8003, Engineering News-Record.

Computer Supervisor—B.S.C.E., B.A., and graduate work; 26. Desire position as Supervisor of computer section for an engineering organization. Experienced in heading computer group engaged in bridge design. Desire Mid-west location. PW-8004, Engineering News-Record.

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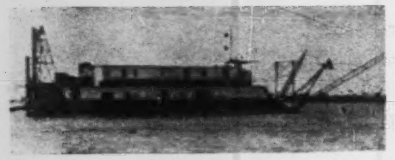

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All complete with working parts. The original value of these forms was approximately $15.000. They are used, but in good condition. Sale price for the entire stock $2700.00, plus State tax and transportation. Available immediately. Located in Dallastown, Pa. The entire amount of these forms will be sold at one time.

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Editorials

Peace on Earth

A LATE AFTERNOON SUN hangs like a Christmas Star over a construction job in the foothills of the Rockies. May it be an omen of a more peaceful world and of the happiness the Editors wish for every reader at this Christmas season.

Gains for Conservation

THE IDEA OF CONSERVING EXISTING BUILDINGS is happily [illegible]wing as the staggering magnitude of the job of re-[illegible]r cities impresses city planners. Such conserva-[illegible]grams all over the nation mark the end of those naive days when housing officials and planners saw the headache-ball and the bulldozer as the only first step toward the salvation of the cities.

Such eastern metropolises as New York and Philadelphia have for some years recognized the futility of concentrating all renewal activity in slum clearance and new construction. Aided by the liberalized provisions of the 1961 Housing Act, these cities are beginning to devote a considerable part of their renewal efforts to conservation.

Now, Denver has come forth with an unusual conservation plan. Beginning next year, the city building department will inspect Denver's 3,000 industrial, commercial and apartment buildings every three years. Six new inspectors to be added to the building department staff will provide the additional manpower needed. Owners will pay fees ranging from $3 to $75 for these inspections, which will cover walls, partitions, mechanical and ventilating systems and so on. The hope is entertained that within a few years the results achieved from frequent re-inspection will reverse any trend toward deterioration, and minimize the need for full-scale slum clearance and urban renewal.

Despite our best efforts, of course, many American cities will have areas requiring major construction surgery in the years ahead. But conservation programs nevertheless deserve the attention of city administrations that wish to keep costly demolition and rebuilding projects at tolerable levels.

From the Ground Up

MORE AND MORE CONTRACTORS who have to build structures up in the air are finding it expedient to assemble them on the ground, to save time and labor. The technique is applicable to a wide variety of structures.

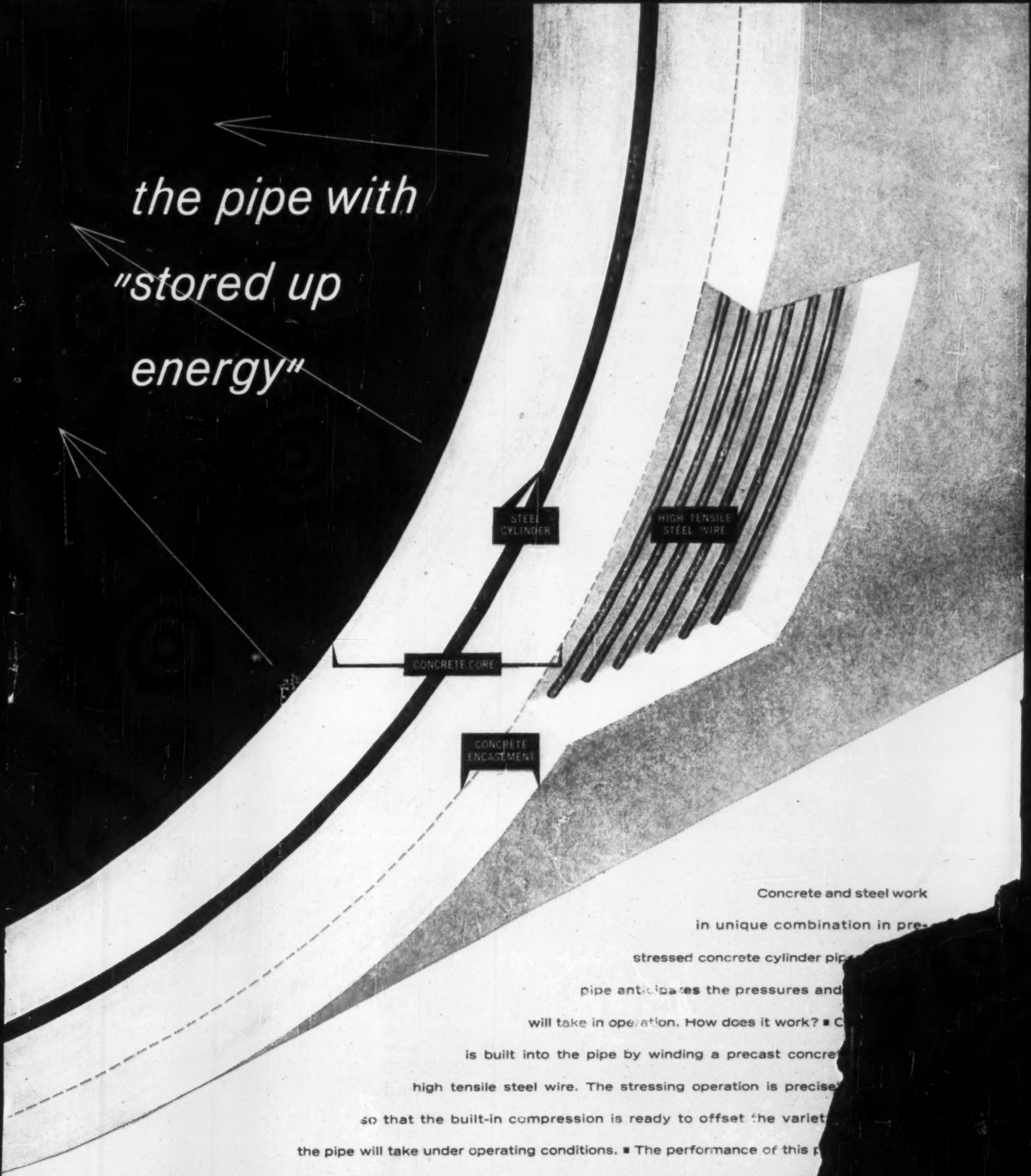
Three outstanding applications to domes were described in ENR Dec. 14, p. 38. Two of these domes were thin concrete shells cast on earth molds; the third was a timber-framed dome. For one concrete dome, the earth was excavated from below to leave it in its final position. The other was jacked onto columns as in a lift-slab operation. The timber dome was assembled with its tension ring on the ground and placed atop a load-bearing wall by a crane.

The excavating technique is similar to that used for a highway bridge a few years ago. The contractor for a bridge on the Edens Expressway in Chicago considered the thirty 154-ft-long prestressed concrete girders required too long and heavy to be precast and erected economically. So he sunk shafts in which the piers were constructed first, after which he cast and post-tensioned the girders at grade on the piers, and then excavated the underpass (ENR May 21, 1959, p. 38).

Probably the most spectacular examples of ground assembly in the U. S. are the lift-slab buildings for which floors and roofs are cast at ground level and jacked upward into place. The lifts have gone as high as 160 ft, for a 14-story apartment building in Hallendale, Fla. (ENR Dec. 26, 1957, p. 24) and up to 15 stories for two 145-ft-high apartment houses at Ann Arbor, Mich. (ENR Aug. 25, 1960, p. 44).

Examples can also be cited for steel frame construction. There was the erection with jacks of the 1,150-ton, 308-ft-square roof of the Air Force Academy dining hall (ENR Jan. 23, 1958, p. 26). And in France contractors have assembled multistory bents for a steel frame building on the ground, then tilted them into place.

These examples—and there undoubtedly are many more—point up the fact that the more work that can be done on the ground the less construction is likely to cost.



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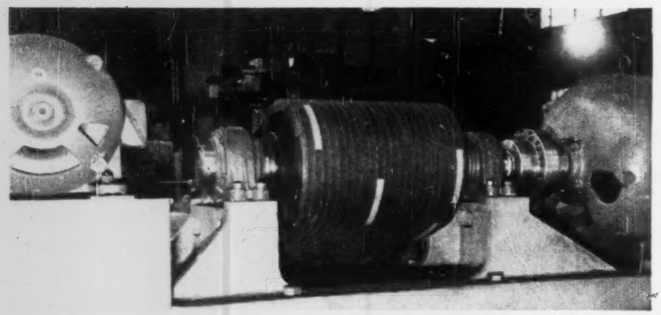

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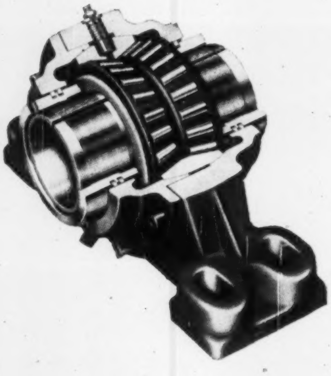

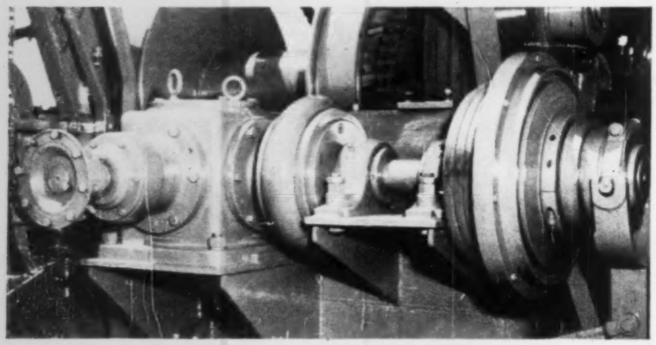

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